Getting Started With Networks • PC Pranks For The Office

PC NOVICE®

PERSONAL COMPUTERS IN PLAIN ENGLISH

PC NOVICE

Sexually Explicit Photos & Language:

Free Speech or ONLINE SLIME?

Senator Exon introduces legislation to clean up the Internet

$2.95
July 1995
$3.95 Canada
Vol. 6 Issue 7

LOSE THE EXCESS AND YOU DEFINE POWER

ULTRA 14
0.39 MM DOT PITCH
1024 x 768 INTERLACED
ENERGY STAR
$219

ULTRA 14NI
0.28 MM DOT PITCH
1024 x 768 @ 60HZ NI
MPR II & ENERGY STAR
$259

ULTRA 15
0.28 MM DOT PITCH FST
ON-SCREEN DISPLAY
DIGITAL CONTROLS INCL. COLOR
1024 x 768 @ 76HZ NI
MPR II & ENERGY STAR
$379

ULTRA 17
0.28 MM DOT PITCH FST
DIGITAL CONTROLS
1024 x 768 @ 76HZ NI
MPR II & ENERGY STAR
$659

Arlington Computer Products, inc.
800-337-5105

CDW
800-915-4CDW

DELLWare
800-449-3355
CODE WMG95

Insight
800-249-9927

USA★FLEX
800-374-9901

POWER
STARTS AT JUST
$219

THE [illegible] ULTRA LINE FROM PRINCETON GRAPHIC SYSTEMS MAKES VALUE THE [illegible] VALUE MARKET WITH ENVIRONMENTALLY SOUND, [illegible] NO-NONSENSE DESIGN.

FROM THE SUPER VGA ULTRA 14, TO THE DIGITALLY CONTROLLED, MULTI-FREQUENCY ULTRA 17, EACH MODEL COMBINES THE FEATURES AND FUNCTIONALITY THAT YOU NEED WITH OUR UNRELENTING DEDICATION TO PERFORMANCE AND QUALITY. THE COMPLETE LINE IS ALSO SHIPPED WITH A WORRY-FREE, THREE-YEAR LIMITED WARRANTY AND KNOWLEDGEABLE TECHNICAL SUPPORT TO KEEP THE POWER ON.

WHEN YOU GET RIGHT DOWN TO IT, A MONITOR SIMPLY PROJECTS YOUR THOUGHTS AND IDEAS. BUT WHEN YOUR THOUGHTS AND IDEAS ARE ON DISPLAY WITH EXCEPTIONAL CLARITY AT A PRICE THAT MAKES PERFECT SENSE, WELL, YOU START MAKING PRETTY POWERFUL STATEMENTS.

PRINCETON
GRAPHIC SYSTEMS

2801 [illegible] • [illegible] 8405 • [illegible] 5736 • 1-800-747-6249 TOLL-FREE

PCNOVICE • TABLE OF CONTENTS • VOLUME 6 • JULY 1995 • ISSUE 7

FEATURE ARTICLES

PLUGGED IN

PC OPERATING INSTRUCTIONS

DOS COMPUTING

WINDOWS COMPUTING

COMPUTING BASICS

FAMILY COMPUTING

EDITORIAL STAFF *Ronald D. Kobler • Cindy Krushensky • Trevor Meers • Juliet Oseka • Whitney Poteus • Kyle Schurman* **ART AND DESIGN** *Dave Fiala • Diane M. Hunt • Randy Kosch • Heath Miller • Lesa Scarborough • ReBecca M. Tool* **CIRCULATION DEVELOPMENT** *Blaine Burmeister • Sheila Cieslik • Joe Collins • Eric Dale • Shannon Diedrichsen • Allison Gibbs • Kimberly Greenwood • Kim Homes • Patti Karabel • Elizabeth Rambacher • Kevin Sander • Brian Shelbourn • Natalie Sime • Shannon Vandewege* **NEWSSTAND** *Stephanie Contreras • Garth Lienemann • Mark Peery • Jeff Prvatt • Chad Tonniges* **ADVERTISING SALES** *Mike Alessandro • Brad Bryan • Debbie Butt • Grant Osenkop*

PEED CORPORATION ***President*** *• Thomas J. Peed* ***Executive Vice President*** *• Rhonda Peed* ***Vice President*** *• Mitchell W. Schainost* ***Vice President*** *• Dave Steen*

PRINTED WITH SOY INK

Subscriber Service Information:

For Subscription Information Or Service:
(800) 424-7900
To Order Back Issues/Reference Binders:
(800) 367-7333
Authorization For Reprints:
(800) 334-7458
Editorial Staff: **(800) 544-1264**
Advertising Staff: **(800) 848-1478**
Staff Hours: **8 a.m. - 5 p.m. CST Mon-Fri**
FAX: **(402) 479-2104**
Mailing Address: **120 W. Harvest Drive Lincoln, NE 68521**

TECHNOLOGY NEWS

Compiled by Cindy Krushenisky

Commanding The Kitchen

Many people may speak to the appliances in their home, but most don't expect their oven, coffee maker, or dryer to listen. Someday that all may change. Whirlpool Corp. is developing a line of voice-activated devices that let you tell your home appliances what to do.

Using a VoiceLogic technology by Voice Powered Technology International of Sherman Oaks, Calif., Whirlpool has created KitchenAid Voice Command prototypes that allow for hands-free operation. In many cases, single spoken commands replace a series of entries or selections on a control panel.

And you don't necessarily have to remember all the commands. The products are being designed to prompt the consumer visually. For instance, a prototype oven display would read "Cook?" to which the user would say "Prime Rib." Then the display would read "Weight," while the user would respond "Eight pounds." The display would ask "When Finished?" and the user would answer "6 p.m." The final display would then read "Prime Rib - 8 pounds - Finished at 6 p.m."

Whirlpool demonstrated its prototypes of a voice-activated oven, dishwasher, side-by-side refrigerator, and washer and dryer at the 1995 National Association of Home Builders convention held earlier this year in Houston. The prototypes will help to determine if the voice-activated features really meet the needs of Whirlpool's target customer. It's likely we may not see appliances bearing the "Voice Command" logo in stores until at least 1997. ●

Number 1?

It appears as if the United States is back on top. Several recent studies reveal that the personal computer market here is more developed than anywhere else in the world. However, many consumers still are apprehensive about using the technology.

According to the Global Home Market Survey of about 7,000 consumers in the U.S., Western Europe, and Japan by International Data Corp. of Framingham, Mass., 37% of U.S. households have one or more PCs, compared to 28% in Germany, 24% in the United Kingdom, 15% in France, and less than 10% in Japan (when computers provided by employers or schools are included). Not only do a much higher percentage of homes have computers, but the use of consumer applications such as education, entertainment, and online services are more developed in the U.S. And that's likely to grow even further. The Multimedia Research Group of Sunnyvale, Calif., indicates that the U.S. consumer electronics market will increase to $70 billion by 1997, an increase of more than 60% since 1990.

Although the American market is skyrocketing, segments of the American population aren't ready for, or simply do not want, several of the new technologies available. A study by IMR Research Inc. of Clarendon Hills, Ill., found that some consumers aren't too hip on the Information Superhighway and simply weren't that interested in some of the core info-highway services: movies "on demand," home shopping, and information databases.

So are we a world of "technophobes?" IMR president Ken Brenneman explains that there's too much evolution happening in the market. And besides, television took nearly 40 years to fully penetrate American homes. ●

Computer On Wheels

Automobiles are evolving from the simple systems your average Joe could repair with a few minor adjustments. Computer chips now provide many popular features, such as smooth transmissions, air bags, anti-lock brakes, keyless entry, and other features. In fact, many Apple Macintosh owners probably don't realize that the same family of microprocessors that runs their computer also likely runs the engine of their automobile.

The world's largest automobile microprocessor manufacturer, Motorola, announced that it has a fairly good idea of automotive features to come. Besides being more reliable and more convenient, Motorola envisions automobiles that will include night-vision enhancements for poor visibility conditions, navigation systems with near- and rear-object detection, cabin noise cancellation, and adaptive cruise control for adjusting speed and distance between other vehicles. The company even goes so far as to predict electric, zero-emissions vehicles will be likely in the next decade. ●

Microsoft In The Money

Microsoft Corp. has muscled its way into many areas of computing, including operating systems, multimedia software, networking, and online services. Now it's using that influence and know-how to move into another market—global financial services.

Money is continually changing hands electronically around the world. And Microsoft wants a part in it. According to a study by Palo Alto, Calif.'s Killen & Associates, Microsoft will have a major impact on the global financial services market by the year 2000, with $2 billion worth of revenues in electronic funds services (EFS).

Microsoft packs a powerful punch with its unparalleled position in computer software, including its proposed acquisition of Intuit, makers of the popular finance package *Quicken* (which could make every home or business a branch office), its new Microsoft Network online service that will offer direct access to the Internet, and other resources such as the development of an online shopping service and connections to Visa and TCI. This may allow Microsoft to take business from banks, such as Citibank, Mellon, and Bank of America, and make its way to the list of the top 15 EFS suppliers, capturing much of the business and profits now controlled by large financial institutions. ●

The Eye Of The Beholder

Can computers really be creative? Can they think, contemplate, and design on their own? The Computer Museum in Boston gave a little insight into this question this spring.

The Museum hosted the world premiere of AARON, a robotic painting machine built by the celebrated artist, Harold Cohen. Cohen developed AARON at the Center for Research in Computing and the Arts at the University of California, San Diego, by integrating artificial intelligence, robotics, and his approach to art. The result was a continuously evolving, rule-based computer program in the form of a robot that paints.

Every evening, April through May, AARON created several drawings. One drawing was selected the following day to be painted. Over the course of the day, AARON painted the image, which usually depicted people against a variety of settings.

So just whose art is it? Cohen's answer: "I wrote the program. AARON makes the images." ●

Plastic Cash?

Perhaps in the future, cash will no longer be necessary—payments will be made as electronic digits flying through cyberspace.

Visa International apparently had this in mind when it developed an alternative to cash in the form of stored-value cards. A microprocessor is built into each of the plastic cards so it can process money in the form of electronic data.

As a card is used for purchases, the exact amount of money is deducted from the chip, and a stored-value terminal displays the amount of value left on the card.

According to independent research commissioned by Visa, 83% of those polled said they would use a card instead of cash because of the speed, convenience, and simplicity it offered. No more making change or filling out checkbook registers. Hopefully, Visa projects that consumers will use the cards as they would pocket change at typical stops such as vending machines, fast food restaurants, toll booths, payphones, a corner convenience store, or the laundromat.

The only roadblock may be the acceptance of the cards at such places that consumers typically shop. To speed that up, three banking institutions have agreed to participate in a Visa pilot for the 1996 Summer Olympics in Atlanta to purchase food, beverages, and other necessities. In preparation, NationsBank has plans for a pilot of its own this year in Georgia and Virginia. Bank of America also has begun issuing the cards at Visa headquarters for employee use in vending machines and in the company cafeteria. ●

Come Together

What if all the electronics in your office or your home could talk to each other? Would they plan some kind of technological takeover? Probably not. But they could make your business run more smoothly.

About 18 electronics companies, including Canon, Xerox, Fujitsu, IBM, Kodak, Minolta, Mitsubishi, Novell, Ricoh, Sanyo, Sharp, and Toshiba, are teaming up as the SmartOffice Consortium to create specifications for linking office machines.

Imagine a computer network that could route faxes right to the fax machine, just like a printer, or one that could turn on the lights in your office as you log into the building computer network. Or how about a network that could hook into a television set-top box for video on demand, travel reservations, shopping, and banking?

Rather than create the software, this group will create an interface standard for products to conform to. Work, however, is underway on the software. For instance, Novell recently demonstrated what the new Novell Embedded Systems Technology (NEST) could do for office appliances at its annual BrainShare conference. The software lets companies incorporate networking capabilities (such as the abilities to communicate and collaborate) into nontraditional computing devices, such as copiers, fax machines, building controls, televisions, phones, home appliances, and even automobiles.

Hopefully you won't have to wait too long for this "office of the future." Some of the consortium companies are developing NEST-enabled products to work with Novell's system. ●

Tech Shorts

This spring, 1,000 homes in the Washington D.C. suburb of Fairfax County, Va., got the opportunity to try video-on-demand with more than 700 viewing choices they could pause, rewind, and fast-forward. The chance was part of a Stargazer market trial by Bell Atlantic Video Services Co. that may grow to 20,000 homes next winter with Federal Communications Commission approval...

Sprint and Eastman Kodak recently announced an alliance to create image storage and distribution services across Sprint's all-digital, fiber-optic network. Using Kodak's technology to create centralized databases and a new universal digital exchange format, the services would let people share pictures and documents. So researchers could search databases for historical photographs, businesses could maintain their corporate photo files online, and publishers could store large documents centrally and retrieve them as needed from remote locations...

How smart is your house? Bell Atlantic's SmartHouse in Toms River, N.J., knows all about videoconferencing, distance learning, and telecommuting. It's actually a demonstration center for businesses and schools that showcases new video, work-at-home, and educational communications products—things like ISDN digital phone services and desktop videoconferencing. Here, dreams of attending a staff meeting from home, or studying with a marine biologist in the Florida Keys, don't seem too far out of reach. ●

PRODUCT PREVIEWS

"LazyLight . . . Switch!"

We know who we are—consumers anxiously looking for ways to avoid leaving our seats to turn off the television, or the lights, or the stereo. But soon we find that mountains of remote controls garnish the coffee table. Or, clapping devices flip the lights off and on, even as we accidentally cheer for our favorite sports team.

A company called Sonovox of O'Fallon, Mo., has another idea. It has been developing circuit boards that use voice recognition to control ordinary appliances.

The first of its releases is the LazyLight. When you add this gadget to your light switch, just say the phrase, "LazyLight . . . Switch," and LazyLight flips the light on or off. It has been designed to respond to anyone's voice but will ignore other words, motions, and sounds. A Spanish version is in the works and may be available by fall.

It won't break the bank to get one of these devices, either. The LazyLight sells for $29.99 from Sonovox. For more information, contact (314) 946-3751. ●

Let Your Voice Do The Dialing

Look Ma Bell, no hands. Whoever said you needed to let your fingers do the dialing never met up with AT&T's Directional Microphone SDM 1100. It lets PCs doubling as telephones respond accurately to voice-dial commands, in the form of spoken numbers or names.

Add it to a PC's telephony software that uses voice recognition software, and the Microphone filters out background noise and reverberation that often cause dialing errors with other devices.

The Directional Microphone SDM 1100 costs about $40 and is available in AT&T Phone Center stores and selected retail outlets. For more information, call (800) 826-8647. ●

Talk About Your Audio/Visual

While we may not all pick Techno Squid Eats Parliament or Two Minutes Hate for our listening pleasure, we can at least appreciate what they are up to.

The two bands were featured on the first two releases of a series of multimedia AudioVision CDs. These full-length CDs let users listen to CD-quality music on their audio CD player, as well as view music videos with background about the bands, interviews with band members, and scrollable song lyrics on their personal computer.

AudioVision CDs are the result of a joint venture by Philips Media (a subsidiary of Philips Electronics, NV of the Netherlands) and Memphis-based Ardent Records. Like similar audio-visual CDs recently introduced to the market, the images and sound are arranged in tracks. However, other CDs normally place data in the first track that, when played in audio CD players, can create loud audio distortion that damages some stereo systems. Philips and Ardent instead have a developed a way of **caching**, or putting the audio in a temporary holding area in memory, so that audio CD players would not be able to "read" the video information by accident.

Both titles are available in record and video channels via PolyGram Group Distribution. They also can be found in software channels, via Philips Media Distribution for less than $20. The first releases can be played on any standard audio CD player or any Macintosh computer. Later releases of AudioVision CDs will be playable on Microsoft Windows, CD-i, and VideoCD (a MPEG full-screen video standard) as well. For more information, contact Philips Media at (212) 333-6767. ●

Must Be In The Front Row

When your tickets take you to the top of the upper deck where the air starts getting thin, you might miss the winning touchdown, home run, or slam dunk. The vision problems may be caused partly by the lack of oxygen, but it's more likely a result of the distance.

Sony recently introduced a product for sporting fans, concert-goers, or outdoor enthusiasts who want to get that first-row view from the cheap seats. Its new SRF-X90 portable sports monocular AM/FM radio combines the stereo radio of a Sony Walkman with high-powered magnification in one 7.9-ounce unit. It's a clever combination that lets you simultaneously tune into broadcasts of sporting events as you view them close up.

The monocular lens can make far away objects eight times closer—if you're really in the "boonies." It also has a sleek look, as well as rubber gaskets and resistant seals that resist water, moisture, and dirt, just in case the game isn't called for rain. And it all operates on a single "AA" battery.

The SRF-X90 is now available for a suggested retail price of $80. You can contact Sony Electronics at (800) 222-7669 or (201) 368-9272. Or you can call (800) 342-5721 to locate a dealer near you. ●

The MultiPASS™ 1000 Document Processing System. It combines a laser-quality printer, a plain paper fax, a PC fax, a scanner, a personal copier and a telephone — all in one compact unit. MultiPASS Desktop Manager for Windows™ software is included to manage printing, faxing, scanning and telephone functions. Plus you can print and fax from the Windows applications you're using now. MultiPASS is everything you need next to your PC. Everything.

It's a Printer. The MultiPASS 1000 incorporates 360 x 360 dpi award-winning Bubble Jet™ technology. It has a front loading, adjustable 200-sheet letter/legal paper cassette. The easy-to-replace, self-cleaning BX-2 (BC-02) ink cartridge snaps into place. And the MultiPASS 1000 supports popular printer emulations from Canon, IBM® and EPSON.®

It's a Plain Paper Fax. You get a 30-sheet auto document feeder for hard-copy faxing. Transmission speed is only 9 sec/page.* The MultiPASS 1000 uses Canon's Ultra High Quality (UHQ™) technology allowing it to scan photos in 64 halftone levels. Reception memory is 70 pages* and transmission memory is 50 pages.* What's more, you can send faxes even when your PC is off.

It's a PC Fax. With the MultiPASS 1000, you can fax directly from your PC at a speed faster than most faxboards. You can receive faxes while you're printing or when your PC is off. You can view faxes with zoom and full rotation, then save, print, forward or delete them. You can create a custom cover sheet and a virtually unlimited fax address book.

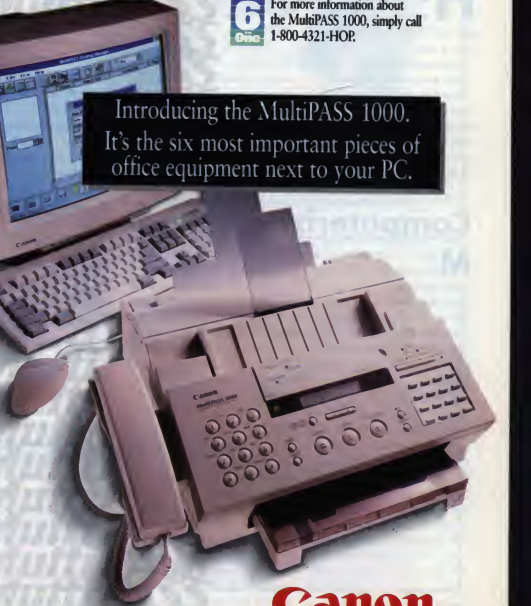
It's a Scanner. The MultiPASS 1000 offers TWAIN-compliant scanning with 200 x 200 dpi resolution and seven-level contrast control. It is compatible with most OCR software, enabling you to edit imported text without keying it in. And the 30-sheet auto document feeder lets you easily scan multi-page documents.

It's a Copier. You can make up to 99 laser-quality plain paper copies. The automatic document feeder holds 30 sheets and the front-loading, adjustable paper cassette holds 200 letter- or legal-size sheets. Canon's exclusive UHQ technology produces excellent copies of fine text and graphics.

It's a full-featured Telephone. The MultiPASS 1000 telephone has on-hook dialing. You get a virtually unlimited telephone address book for point-and-click dialing, plus coded speed dialing to 80 locations. It has a Distinctive Ring Pattern Detector for use with special telephone company services. Plus it has a hold button with melody and an answering machine hookup.

For more information about the MultiPASS 1000, simply call 1-800-4321-HOP.

Introducing the MultiPASS 1000. It's the six most important pieces of office equipment next to your PC.



*Based on CCITT #1 Chart (Standard Mode) © 1995 Canon U.S.A., Inc. Canon is a registered trademark and MultiPASS, Bubble Jet and UHQ are trademarks of Canon Inc. Windows is a trademark of Microsoft Corporation. IBM is a registered trademark of International Business Machines Corporation. EPSON is a registered trademark of Seiko Epson Corporation. Canon computer not included.

Canon

Earth-Friendly Diskettes

Have you ever wondered what happens to the software packages that don't get sold? Until a couple of years ago, a majority of them were thrown away—diskettes, boxes, plastic wrap, Styrofoam, and all.

Just how much garbage is this? The Software Manufacturer's Association estimates that less than 30% of packaged software is ever recycled. This overestimation of supply and demand inevitably led to another garbage problem in our landfills.

Although the U.S. Environmental Protection Agency doesn't have specific standards for the degradation of plastic, including the ABS plastic used for diskettes, it estimates that it'll take at least 450 years, if not forever, for a box of software diskettes to degrade. All this garbage consumes more than 16 million cubic feet in U.S. landfills.

GreenDisk Inc., based in Washington, offers a solution—recycled diskettes. For $5.50 to $8, you can buy a box of 10 recycled diskettes. Since it started on Earth Day 1993, GreenDisk has recycled slightly less than 20 million pounds of software packages. Statistically speaking, that means landfills have been spared of approximately 20 million diskettes, and consumers are getting more for their bucks.

GreenDisk takes the obsolete software packages, magnetically erases the intellectual property, and recycles the rest, including shrink-wrap and binders. It then relabels the diskettes and sells them as high-quality, formatted, environmentally repackaged diskettes.

"Consumers are helping the environment *and* getting higher quality diskettes," says Joel Petersen, vice president of sales/marketing for GreenDisk. "These disks are 20% higher in quality than the disks people usually buy."

Companies that produce software usually use "professional grade" diskettes for their mass production; these diskettes are the highest quality available, with the diskettes most consumers buy falling into the next lowest category.

"Basically, consumers are getting professional grade disks that have never been in a computer" for a lower-than-normal price, Petersen says.

GreenDisks are currently available through Egghead Software (800/EGG-HEAD) and PC Zone (800/258-2088).

For More Information:

GreenDisk Inc.
(800) 305-DISK
(206) 489-2550 ●

Computerized Car Lot

Most of us can relate to this scenario: You need to buy a car, but you're not sure what you're interested in. You do know that you'll be harassed by phone calls from salespeople until you buy a car from them (unless you gave them someone else's phone number).

Hachette Filipacchi Magazines, publishers of *Car and Driver*, Mammoth Micro Productions, and Sony Imagesoft may have an alternative. The *Car and Driver '95 Buyer's Guide On CD-ROM* ($39.95 suggested retail price) covers 850+ models of cars in an intuitive interface and includes 370 feature articles from *Car and Driver*, more than 650 color photographs, 30 full-motion videos, a connection to America Online, and *Car and Driver* road tests, performance ratings, and comparisons.

The '95 Model Index option is the quickest way to access information about cars when you know what you're interested in but aren't ready to dance the dealership tango. Click on Make, then Model to get model summaries, test results, photos, features/specs, article index, and pricing information. Pricing information is for base models; an Options button gives information about available options packages.

The Model Selector lets you fill in a Preference Profile, which asks for vehicle type, price range, drive train, and performance. Click on View Results for a photo list of models matching your criteria. Clicking on a photo provides a model summary and the same options found in the Model Index.

The Model Selector in the *Car and Driver '95 Buyers Guide* lets you find cars that match your criteria.

Buying Advice is designed for people who know they need a new car but haven't given much thought to it. The Driving Profile asks a series of questions about your price range; what you use your vehicle for; speed you would drive at on a paved, empty Nevada highway (i.e., "drive 85 mph because you don't get many chances like this"); and typical driving conditions.

C and D Online lets you access the Daily Auto Insider, Vehicle Reviews, subscription information, and order forms for brochures from companies.

Installation of the program is fairly easy, though we had fewer hassles when we changed our Display setting to the recommended VGA 640 x 480, 256 colors, small fonts. Not changing your display settings results in erratic video, system lockups, and an absence of some graphics. Hassles aside, this product is the next best thing to giving a salesperson the phone number to Dial-A-Prayer.

For More Information:

Car and Driver '95 Buyers Guide
Sony Imagesoft
(800) 922-SONY (orders)
(310) 449-2999 (information) ●

IMAGINE WHAT YOUR BUSINESS COULD DO WITH 90 MILLION!

PhoneDisc'95 A Brilliant Tax Deduction!

"Easily the best CD-ROM phone directory you can buy!"
-PC World, December 1994

Top 10 CD-ROMS

PC MAGAZINE — PC Magazine September, 1994

Jumpstart your sales, boost your productivity, expand your customer base, and that's just for starters! PhoneDisc '95 - America's Phone Book on CD-Rom - delivers 90 million of the most accurate and complete directory listing nationwide. That's 90 million listings you can look up, print or export into your favorite contact manager.

With *absolutely no restrictions* on printing or exporting, ZIP + 4 information, six digit SIC codes, customized mailing labels, and reverse search indexing, PhoneDisc '95 will spark new ideas for marketing and sales opportunities, and benefit your bottom line! Try PhoneDisc '95. Wouldn't 90 million open up a whole new world of possibilities for your business?

WIN/MAC/DOS

PhoneDisk

***To order call* 1-800-929-1092**
or mail check to Multiworld • 5645 F. General Washington Dr. Alexandria, VA 22312

VISA · MasterCard · American Express Card · DISCOVER

PHONEDISC PRODUCTS

Business $79 - Over 9.5 million listings with reverse searching by name, address, phone number, business type or SIC code.

Residential $79 - List 81 million residences on 2 regional discs! Retrieves names, phone numbers, addresses and zip codes.

Power Finder $249 - Over 90 million residential and business listings on 5 regional discs with reverse search indexing.

Combo Pack $129 - PhoneDisc Business and Residential directories bundled together. Two great products, one great price!

Disc Drive

Janus Interactive's *License To Drive* is the '90s version of the driver's manuals most of us picked up for free at the Department of Motor Vehicles and browsed through once, if we were diligent, while Mom drove us to the testing center. The CD-ROM's information is basically that of the traditional manual, but the software illustrates several points with animation and offers multiple choice questions to test learning. Buyers will have to decide if those additions are $60 more valuable than the free manual at the DMV.

License To Drive is easy to navigate. At the main menu, users choose a topic by clicking buttons with labels, such as Rules of the Road, Defensive Driving, and Driving Situations. Users can move among the information screens by clicking arrows at the bottom of the screen. A voice explains the screen's topic while text covers the issue in more detail. It would be helpful if the narrator read the same text as that on the screen.

While the program acknowledges that it is no substitute for a hands-on driver training course, the CD covers all the factual information needed to prepare for driving. The explained driving skills include controlling the car in various weather situations, sharing the road with other drivers and pedestrians, and watching for potential hazards. The program points out some common temptations, such as trying to beat a train to a crossing, and explains why they should be avoided.

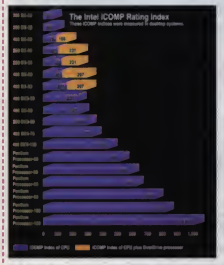
In several cases, the animation relates the information better than the static drawings in traditional driving manuals. When studying how to merge onto freeways, for example, it's helpful to watch an animated car adjust its speed to find an opening on the road. The program's statutory information also is valuable, as it explains where a driver's license is valid, what documents to take when you apply for one, and what information to share with others if you're involved in an accident.

At the end of each section, users have the option of taking a multiple choice quiz. The program presents a test like that used at the DMV and reports what percentage of questions were answered correctly. It's worth asking, however, whether such a feature is worth sixty bucks when someone at home could quiz the student driver for free.

For More Information:

License To Drive
Janus Interactive
(800) 766-0835
(503) 629-0587 ●

Microprocessors Are Shrinking, And Fast



Intel's iCOMP index compares a number of industry standards to determine the power of various microprocessors.

It's hard to imagine how things that get smaller can be faster, but that's what seems to be happening in Intel Corp.'s line of Pentium **microprocessors**, which are the brains of many IBM and compatible computers.

Currently, you can find Pentium processors running at speeds of 60 **megahertz (MHz)**, 66MHz, 75MHz, 90MHz, and 100MHz. (One megahertz equals about a million computer clock cycles per second.) But now Intel is adding a Pentium processor that can operate at 120MHz.

Not only is this 120MHz processor faster than other Pentiums, but it's also smaller. This is the first microprocessor to be released in volume by Intel that uses a special 0.35 **micron** process technology. (A micron is approximately 1/100th the diameter of a human hair.) This new technology allows the **die**, or the square of silicon that contains an integrated circuit of tiny transistors, to shrink to about half its normal size. For instance, the 75MHz, 90MHz, and 100MHz Pentium chips were almost double the size because they used a 0.6 micron technology. Meanwhile, the 60MHz and 66MHz processors were even bigger, using a 0.8 micron technology.

This smallness will allow microprocessor manufacturers to add more performance and reliability to the processors it makes. Just check how the new Pentium processors compare to the old in Intel Corp.'s iCOMP rating Index. You'll see that the new 120MHz Pentium is the first processor to reach the 1,000 level on the iCOMP Index. In addition to better performance, Intel also claims these smaller chips will lead to lower-costing products in the future.

The 120MHz chip won't be the end of the Pentium line. Look for even faster processors to be introduced throughout the year. Intel promises that it will introduce a Pentium that can run at speeds of 150MHz.

For More Information:

Intel Corp.
(800) 628-8686
(408) 765-8080 ●

Say, Say, Oh Playmate . . .

Davidson & Associates throws out the welcome mat to the *Fisher Price Dream Doll House*.

Doll houses for today's little girls are a far cry from their mother's dream dollhouses. Not only have the dolls become digital, but the houses require at least 8MB of RAM.

The PC becomes the playmate with Fisher Price and Davidson & Associates' *Fisher Price Dream Doll House*. The pastel-colored, two-story house features a kitchen, living room, bathroom, two bedrooms, and an attic playroom. Children can visit any of the rooms and "play" there as long as they like. The house is filled with objects that children can click on to make things happen or move around. For instance, they can click on the record player to listen to a song or on the blender to see it operate. They can open drawers, dressers, and containers to find toys and other hidden objects. Maybe they'll run across a mousehole concealing a mouse concert or a swimming pool.

Children can feed the cat, put away groceries, give the dog a bath, or play dress-up. Three magical "Sprites" let children redecorate the house by adding special touches to a chair, a bedspread, a rug, or the view from a window. And when your child is through playing, he or she can tidy up.

At the click of a button, on-screen playmates join the fun. The user can move the playmates and interact with them, directing them around the room or into a chair. Other interactive characters appear now and again to give tips on other things children can explore or do if they run out of ideas.

The Dream Doll House is a new way for young kids to explore and play house. It is a delightful program that should be purchased for the adventure and imagination that an interactive software program can bring. But to buy this $35 program in place of a good, old-fashioned doll and dollhouse would be a mistake. Although there's lots of activities, the program has limits, especially when the child runs out of things he or she can do.

For More Information:

Fisher Price Dream Doll House
Davidson & Associates
(800) 545-7677
(310) 793-0600 ●

Cataloging Your Video Library

You know who you are. Your child has every Disney movie released on video cassette and knows every line and lyric by heart. While you may be building fond memories, you're also building up a pile of video cassettes on the shelves of your entertainment center.

If you're one of those ambitious collectors with a little time on your hands, we've discovered an item you might find helpful. *SmartTracker* by Insight Software Solutions is a simple, easy-to-use database program that lets you track, organize, and catalog the video clutter.

For each film, you can track the director, actors, category, release date, rating, and any Oscar awards it received, just to name a few of the entries. With all this information at your fingertips, you can search the database for any movie: a Clint Eastwood flick, a Disney classic, or an Oscar winner.

Along with all the film facts, there's also a place to track where you store the films. Enter in your own number or lettering scheme (i.e., A1, B7, C18) to catalog your videos. There's also an option that lets you include the list price of each video, so you can track the value of your collection for insurance purposes.

The downside of SmartTracker is the time it takes to enter all the information into the program, especially if you can't remember the price or any other details. And, if you were really overzealous, you could create a similar program on your average database or spreadsheet.

SmartTracker is actually a **shareware** title, meaning it is a program you can try for free before deciding to purchase it, usually directly from the developer. Potential users who have access to the Internet can obtain evaluation copies from a World Wide Web home page at http://www.smartcode.com/iss or an FTP site at ftp://ftp.smartcode.com. In addition, evaluation copies can be found on CompuServe in library 4 of the UKSHARE forum and through other shareware outlets. If you decide to order, the cost is $25, plus $3 for shipping and handling.

For More Information:

SmartTracker
Insight Software Solutions
P.O. Box 354
Bountiful, UT 84011-0354
(801) 295-1890 ●

Piece It Together

You've searched high and low and still can't find the missing pieces to your 1000-piece jigsaw puzzle. The frustration of lost pieces is now over with Argos Gameware's *Art Apart*. This multimedia jigsaw puzzle for Windows lets users reassemble as few as eight pieces to more than 1,000 without the threat of a piece missing. Players slide interlocking, three-dimensional pieces into place with the sound of a satisfying click.

The first thing players do upon opening Art Apart is to choose a picture. Choices range from photos of the British Royal Guards to a Ferrari F130 to animated pictures of a dancing monkey and a cat with yarn. After choosing a picture, you must decide the number of pieces into which the picture will be cut and if you are a beginner, novice, or expert puzzler. Once these choices are made, the fun begins.

The program scatters the pieces across the on-screen table, and you put the puzzle together by dragging and dropping the pieces into place. Users will find the point-and-click interface easy to use and the manipulation of the puzzle pieces simple enough for young children. If the puzzle is too complex to finish in one sitting, users can save the completed part for a later date.

A fun feature of this puzzle is its scoring mechanism. A player's score is determined by the number of pieces chosen, the skill level chosen, and the time it takes to click each piece into place. The program figures the score automatically and displays it once the puzzle is completed. This scoring adds a little excitement to puzzle playing by letting users race against the clock and each other.

Another interesting feature of this puzzle is that once a piece is close to where it belongs, the program snaps it into place and locks it, preventing you from moving it again. However, if you try to place a piece in the wrong spot, the program won't lock it, letting you remove the misplaced piece. If you fancy yourself an expert puzzle player, you can choose Expert under the Skill Level option. By choosing this, the pieces won't automatically snap into place, requiring you to click the mouse button to lock the piece.

Art Apart, available on diskette, can be purchased for about $29.95 at computer retail stores.

For More Information:

Art Apart
Argos Gameware
(800) 367-3366
(201) 845-3357 ●

Piecing together pictures, such as this one of hot air balloons, lets users hone their puzzling skills.

Oh, The Web We Can Weave

Get into the swing of creating your own Spider-Man cartoons.

What do Mysterio, Scorpion, Shocker, and the Green Goblin have in common? Well, besides the weird costumes and strange powers, these villains are all featured in a new CD-ROM program with the old web-weaver himself, Spider-Man.

Instead of passively watching cartoons, the new Knowledge Adventure's *Spider-Man Cartoon Maker* lets you try your hand at making them.

Luckily, you don't have to be an artist to make comics that look like they came straight out of the Spider-Man series. There are a variety of backgrounds that you can choose from, like Kingpin's Headquarters, the Science Lab (minus the spiders), or the Underground Subway Tunnel. Then you "stamp in" props to set the stage, like an explosion or a security guard, depending on what kind of calamity Spidey has to face. If you want to get creative, painting and drawing features let you add your own touches.

Unlike your average comic books, this one is electronic, so it includes animation, music, and sound. Almost all the characters are animated to run, jump, climb, or whatever their specialty. Some of the objects come with their own sound effects, or you can add one of the themes from the cartoon series. There's even a button that lets you record a running dialogue in your own voice.

If you want to learn from the master himself, three original animated cartoons created by Stan Lee are available for viewing.

For about $30, the program has levels for beginners and experts, and it doesn't take long to learn how to create cool comics. We did find, however, that some of the animation is limited (we can't all make television-quality cartoons) and may take a little longer to figure out how to use.

Although it's an imaginative product that can be used by children and adults alike, we wouldn't bill it as educational. Rather, it's an entertaining add-on for any Spidey fan's CD-ROM collection.

If Spidey isn't your superhero of choice, the Spider-Man Cartoon Maker is just the first in a series of software titles from Knowledge Adventure that will be based on similar, licensed characters.

For More Information:

Spider-Man Cartoon Maker
Knowledge Adventure
(800) 542-4240
(818) 542-4200 ●

We made it first. We make it to last.

Maxell's Super RD II disk with dual interlocking flex shutter.

Made with two interlocking pins molded into its spine to avert damage if dropped, Maxell's unique flex shutter provides a secure fit that prevents particles from getting through and scratching the disk.

And an innovative multi-layer liner inside works to lift dirt and foreign particles from the surface of the disk itself, enhancing performance. As an added convenience, the Super RD II disks are formatted for IBM and Macintosh and backed by our lifetime warranty.

It's good news, especially in a portable world where your disks will need greater protection. Just leave it to Maxell to create the flex shutter which offers the best security for your valuable data.

maxell

Advanced Technology, Higher Performance.

Maxell Corporation of America, 22-08 Route 208, Fair Lawn, NJ 07410.

Instant Aid From FASTHELP

Microsoft provides DOS users quick ways to remind themselves about the functions and rules for using all those arcane DOS commands. One reminder, a DOS program called Fasthelp.exe, provides just one sentence about each of the DOS programs listed, but with all the programs stashed on most systems, the list can grow quite long.

FASTHELP is a less-detailed version of MS-DOS HELP with the strength of telling you in a succinct way only what you need to know. Let's say, for example, you need to make a duplicate diskette. You may struggle to remember which DOS command makes an exact duplicate. Is it the COPY command, the DISKCOPY command, or the COMP command? This is where FASTHELP is useful.

FASTHELP displays a two-column list of DOS commands and their purposes when you type **fasthelp**. When you run FASTHELP at the DOS prompt, you'll see the information displayed in the box at the right.

As you can see, FASTHELP displays a list about twenty-five lines long revealing the nature of the first group of DOS commands that can be displayed on one screen. Whenever you see "—More—," DOS has more to say than will fit on the screen. Press any key when you're ready to see more DOS commands described. FASTHELP will then present you with twenty-five more lines of information on the nature of DOS commands. Keep reading and pressing any key to see all of FASTHELP's descriptions. You'll soon be back at the DOS prompt where you can run FASTHELP again if you missed the description you were looking for.

If FASTHELP's first level isn't enough, you can read detailed descriptions revealing the hidden functions of each DOS command that has its own help file built into it. Let's say you want to find out how to customize the use of the DISKCOPY command. You can use a second level of FASTHELP to discover what DISKCOPY can do or even to print the information for easier reference. Type the name of the DOS command (without the filename extension) after the FASTHELP command, leaving a space between FASTHELP and the name of your DOS program. For example, type **fasthelp diskcopy**.

This command produces the following:

- Copies the contents of one floppy disk to another.
- DISKCOPY [drive1: [drive2:]] [/1] [/V] [/M]
- /1 Copies only the first side of the disk.
- /V Verifies that the information is copied correctly.
- /M Force multi-pass copy using memory only.
- The two floppy disks must be the same type.
- You may specify the same drive for drive1 and drive2.

FASTHELP is available only with MS-DOS 6.0 and higher. In DOS 5.0, type **help** for a brief description of each command's function. Type the HELP command followed by a space and the command name to get more detailed information. In DOS 6.0, the HELP command presents a table of contents listing every DOS command. You can see a detailed description of a command by clicking on it with the mouse. Typing the HELP command followed by a command name in DOS 6.0 takes you directly to the description screen, skipping the table of contents.

Note that FASTHELP displays the contents of each DOS program's built-in help. You can also receive help on most commands by typing the command name, space, slash, and question mark. For example, type **xcopy /?**. This command is handy with many shareware programs, which are often short on documentation.

Most DOS 6.2 programs and commands offer more detail than the normal user will wish to assimilate, so feel free to press the PrintScrn key and send this help to your printer for future use or just to be able to review this detail on paper. ●

by Robert Mullen

For more information on a specific command, type FASTHELP command-name.

APPEND—Allows programs to open data files in specified directories as if they were in the current directory.

ATTRIB—Displays or changes file attributes.

BREAK—Sets or clears extended CTRL+C checking.

CD—Displays the name of or changes the current directory.

CHCP—Displays or sets the active code page number.

CHDIR—Displays the name of or changes the current directory.

CHKDSK—Checks a disk and displays a status report.

CLS—Clears the screen.

COMMAND—Starts a new instance of the MS-DOS command interpreter.

COMP—Compares the contents of two files or sets of files.

COPY—Copies one or more files to another location.

CTTY—Changes the terminal device used to control your system.

DATE—Displays or sets the date.

DBLSPACE—Sets up or configures DoubleSpace compressed drives.

DEBUG—Starts Debug, a program testing and editing tool.

DEFRAG—Reorganizes the files on a disk to optimize the disk.

DEL—Deletes one or more files.

DELOLDOS—Deletes the OLD_DOS.1 directory and the files it contains.

DELTREE—Deletes a directory and all the files and subdirectories in it.

DIR—Displays a list of files and subdirectories in a directory.

—More— ●

Life In The FASTOPEN Lane

PC methods and products are frequently judged by their ability to make a system run with less expense, less waiting, and fewer problems. If you believe two out of three isn't bad, you'll like MS-DOS' FASTOPEN, which is cheap because it's built into your system and is fast because it can start DOS programs a bit quicker than would otherwise be possible.

The FASTOPEN program creates a hidden place in your computer's memory, then fills it with a list of the programs and their physical locations. By keeping this reference list, FASTOPEN can send DOS directly to the correct location of a previously listed program without checking DOS' PATH command or your hard drive's own index in order to find it.

DOS is unable to run your word processing software, for example, at the same time it's running your spreadsheet or E-mail software. This means you may need to restart the same DOS programs in order to switch back and forth between well-used programs. FASTOPEN will help these oft-opened programs start up much faster, eliminating your waiting-in-the-wings feeling during a program's startup.

You can use FASTOPEN from the command prompt, either with the keyboard by typing **fastopen c:** or by placing the same command in your Autoexec.bat file so that FASTOPEN runs automatically when you start or restart your computer.

FASTOPEN creates a **buffer** in your computer's memory. A buffer is a dedicated holding area that stores every command you use. When you run a program, such as one that plays an audio CD in your CD-ROM drive, with FASTOPEN already running, FASTOPEN keeps track of the full path to the audio program's location. The first time you enter the path and file name, such as C:\DOS\Playcd.exe, FASTOPEN copies that command into memory for safe keeping. The next time you run that program, FASTOPEN looks into its buffer, locates that program, and starts the program faster than DOS could if you simply typed the command without FASTOPEN running.

"No FAT" Process

When DOS searches for a program file whose name you typed at the command prompt, it checks the index on your hard drive to locate where that program is stored on the drive. While many users think of hard drives as being organized into directories and file names, computers don't actually speak our language and must translate English commands and directory names into actual binary locations in order to run programs. To perform this translation, DOS checks the **file allocation table** (FAT) on the hard drive for the real location of the program you wish to run. (A file allocation table is a list that operating systems use to supervise data storage.) All this takes time. That's where FASTOPEN can help.

When you start a program while FASTOPEN is running, DOS can look up the last known binary location of your program without first checking the hard drive. With FASTOPEN running, your computer will start frequently used programs much faster. In case you're expecting FASTOPEN to let your 486 compete with the neighbor's Pentium, bear in mind that FASTOPEN helps start programs faster but won't help programs run any faster once they've started.

FASTOPEN is great for users who tend to start the same programs over and over again without restarting the computer. You won't reap great benefits, however, when using standard DOS commands like DIR. The DIR command, like several others, is actually run by Command.com, a program that is always running, so FASTOPEN cannot track DIR or offer assistance. FASTOPEN helps with DOS programs that must be run like programs, such as DOS' Mem.exe utility or Wp.exe, the file name of WordPerfect for DOS. If a command appears in a directory listing and is followed by a .EXE or .COM extension, FASTOPEN can recognize that command.

The easiest way to use FASTOPEN is by running it from the DOS prompt as already described. To ensure that FASTOPEN is always running whenever you use the PC, add the same command to your Autoexec.bat file. A third option is to run FASTOPEN from the Config.sys file.

It's wise to run programs from Config.sys rather than Autoexec.bat whenever possible. Running a program from Config.sys takes up slightly less of the computer's conventional memory, which is needed to run most DOS programs. Like your Autoexec.bat file, Config.sys is located in the root directory of your C: drive. To run FASTOPEN from your Config.sys file, edit the Config.sys file with any editor program, such as DOS' EDIT utility. Place the following statement in your Config.sys file as the last line of text:

install fastopen.exe c:

With FASTOPEN, opening those much-used programs will be a breeze. ●

by Robert Mullen

Call now for FREE FACTS on how you can:

FREE IBM-compatible **PC!** Details below...

Earn $4,000 per month from your home with a Computer!

"Call anytime" service. *Unique telephone and online support service gives you access to direct assistance whenever you need it.*

Profitable Turnkey Business Setups Include:

486 IBM Compatible PC Computer with...

- High speed control processing unit
- 420 MB IDE hard drive
- 14" SVGA color monitor
- 4 MB RAM
- high-density 3 1/2" disk drive
- 14.4 baud modem/voice card
- full expansion capabilities

Comprehensive manuals show you how to run our program in simple easy-to-follow steps.

High-Performance Laser printer

The finest income-generating software ever developed... anywhere!

NEW! *Income-generating programs give you:* **Free Internet Free Prodigy, America Online and Compuserve.**

CBSI turnkey businesses include everything you need!

All shipped right to your doorstep—yours to keep at no extra cost!

Keep your present job while you start your own business!
Call CBSI toll-free to get free facts on how you can begin part time to make money in your own home-based, computer-driven business while you retain the security of your present job.

Choose from over 30 turnkey businesses you can operate from your own home!
Our proven step-by-step approach lets you choose from over 30 exciting businesses that anyone can run from their own home—and you need no previous experience—we train you from the ground up!

Here are some of the CBSI services you get—so you're up and earning right away...

- **Equipment and software**—Customized to your special needs.
- **Accelerated training**—Our system gets you up to speed at your very first sitting at the computer. You need no previous experience!
- **Earn as you learn**—Build income step by step as you train. Begin your business part time and add customers and additional services as you go along.
- **Telephone and online support**—Technical/Advertising/Business advice— it's there from our experts whenever you need it!
- **Financing available**
- **Free computer and printer**—When you purchase our software and business programs we give you a powerful 486 IBM-compatible computer system, SVGA color monitor and printer.

Call for Free Information Portfolio.
Find out all about our track record of training other couples and individuals for success. Find out about earning $4,000 per month with a computer– how many are earning lifetime incomes!

No Obligation. No Salesman Will Visit You.

*To get your FREE Information Portfolio—including audio cassettes and color literature with all the facts—*call 1-800-343-8014, ext. 2075 or write:

Computer Business Services, Inc. CBSI Plaza, Ste. 2075 Sheridan, IN 46069

Making Sense Of Windows Printer Settings

If Windows were a party, a printer driver would be the perfect mingler, introducing everyone and sharing enough pertinent details to get conversations rolling. The programs called printer drivers prevent awkward moments between printers and application software by informing the software which options are available in a certain printer. It's a bit like the party host telling you that Bob loves to discuss fishing but that you'll get nowhere talking about politics.

Just as your mate can introduce you in more detail than a casual friend could, printer drivers that came with a printer do the best job of breaking the ice. A built-in Windows driver can get virtually any printer and software "speaking," but the printer manufacturer's driver, as we'll see, offers the most control.

If you select Print Setup from the File menu of any Windows application, you'll see which options are made available to you by the printer driver program. You'll see few or many options available, depending on how expensive the printer may be.

Print quality, for example, is a common setting for all Windows printer drivers. Depending on the printer, the driver installed will allow you to print at varying quality levels, usually denoted in dots per inch. Some modern printers provide a slider that allows you to tailor the quality of your document's look. Higher quality usually means slower print speed and less judicious use of toner or other inking mediums, which makes high quality more costly on a per-page basis. The Canon BJ-200e, for example, offers 300 dpi output that resembles laser quality for less than $300. But when you factor in actual usage costs, the price tag can run up to 8 cents per page if you pay list price for Canon inkjet cartridges and print high quality, image-laden documents. After doing the math, it's clear that the end cost of your new printer can easily pay for that laser printer for just $100 more.

Microsoft offers a long list of drivers on your Windows installation diskettes. In some cases, these drivers are very efficient, fast, and full of customizable options. In many cases, however, you'll find that the printer driver made by your printer's manufacturer is far superior to the Windows program in both speed and number of options available. In fact, if you ask any Windows guru, you'll be told that "proprietary" (made by the printer manufacturer) Windows drivers are preferable for a number of reasons.

If your new laser printer was produced since the advent of Windows 3.1 (spring of 1992), your printer model will not be listed among the printer drivers supplied with your Windows diskettes. You have a couple of options in this situation. The first is to check the printer's documentation to see if a driver diskette is provided with the printer. We recommend against buying any printer that doesn't include a driver diskette. You also can select a Microsoft printer driver that is a close match to your new printer, such as a driver made for a previous model of your printer. The results of this choice can be difficult to swallow. The options that attracted you to your new printer may not be available with an older driver since they didn't exist on previous models of the same printer line.

Another basic option offered by virtually every Windows printer driver is the ability to select different kinds of paper. If your printer is designed to print from more than one feed source, such as a second paper tray or envelope feeder device, the printer driver will offer the option to select the kind of paper you wish to use and the source for the selected paper.

All printers must be plugged into the computer via a cable, and you must tell your printer's driver program the "outlet" used on your PC for plugging in the printer. Almost every PC comes with a special port to be used as an outlet for your printer. These ports are called parallel ports and are named LPT1, LPT2, and LPT3. Parallel connections are more popular today for printing than serial ports because a parallel port

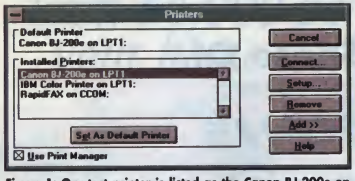


Figure 1: Our test printer is listed as the Canon BJ-200e on LPT1.

prints documents faster, freeing the computer for other tasks all the sooner.

Installing A Driver

To guide you through the process of tailoring your printer's performance, we'll set up a new printer. We picked one of the most popular printers in production today: Canon's BJ-200e Bubble Jet printer.

When you open the printer box, you should find manuals, cords, a partially assembled printer, a toner (or ribbon/ink) cartridge of some sort, and a driver diskette provided for your use with discriminating DOS applications, such as *WordPerfect*, and Microsoft Windows applications. We'll skip the drivers for DOS applications and cover those used by Windows.

Let's say you've assembled your printer, plugged in the power cord, and connected the printer cable between the printer and your PC. After placing paper in the printer and running the self-test routine as the manual suggests, you find your printer to be in good working order. Now you're ready to put it to work for your Windows applications. Installing a Windows printer driver and choosing the right settings can seem a bit daunting at first, but remember that you've already installed the printer and know it's OK. Any future problems must be caused by the driver program's installation or the settings you choose, not the printer itself.

With the printer plugged in, loaded with paper, and powered-up, start your PC and Windows. In the Main group, locate and double-click Control Panel, the utility used to tailor most Windows hardware settings. Double-click the printer icon to open the Printers dialog box, as shown in Figure 1.

Click the Add button to expand the Printers dialog box and install your printer driver. Since your printer came with a printer driver diskette, you won't select one of the printers displayed on the List of Printers: list. Instead, click on the Install button, opening the Install Driver dialog box. Place the driver diskette that came with your printer in your floppy drive, then use the Browse button to find that diskette drive, and select the printer driver provided on the diskette. Once finished, you'll see the name of your new printer added to the Installed Printers list in the Printers dialog box.

If you installed more than one printer, select the printer that will do most of your everyday work by clicking on the printer's listed name, then on the Set as Default Printer button. The last action tells Windows that, unless otherwise instructed, Windows is to use this selected printer for all tasks.

If you're using a program that handles your queue of printed documents, uncheck the Use Print Manager box. If you're sure you aren't using another program to manage printing tasks, click this check box so you have the use of the built-in Windows Print Manager. If you're not using special software to manage the printing of your documents, make sure you click the Fast Printing Direct to Port check box to speed up the printing of documents. Enabling this option allows Windows to send data directly to your printer without involving other hardware during the printing process.

Now check the printer's connection settings. Click the Connect button to open the Connect dialog box. In the Ports list, select an LPT port that does not display the text Not Present. Normally, you should select LPT1 unless it has already been assigned to another printer or hardware device.

Your printer can make mistakes, and it will run out of paper from time to time. The amount of time that Windows will wait before notifying you of such a condition is called a "timeout." Unless you find yourself waiting a long time for printer problems to be unveiled, leave these settings unchanged. If you have a PostScript printer, raise the Transmission Retry setting to 90.

Now take a look at printer driver settings that affect the look of printed documents. Once again, head back to the Printers dialog box, then click on the Setup button to see the <name of printer> Setup dialog box. The setup dialog box for our test unit, the Canon BJ-200e, is shown in Figure 2. With this particular printer, you can choose from a long list of paper sizes. Note that the dimensions of each paper size are displayed in either inches or millimeters. Your printer is capable of printing on any paper size listed.

Another option seen in most printer drivers is Paper Source. If your printer allows you to feed paper in more than one way, these methods will be listed when you click on the down-arrow button next to the Paper Source list box. Select the most likely method for feeding paper to your printer.

The next option offered by our sample Printer Driver is whether to print in monochrome or grayscale. In the Print Selection list box, select the method you wish to use when printing images. If you want to produce the best (and most expensive) images, select GrayScale. The GrayScale setting should produce the most faithful renditions of a classic black-and-white photo. The Black and White setting is handy in showing how outbound faxes will look to the recipient since most fax machines will not yet print the levels or shades of gray needed to make a printed document look even remotely like a photo. If you wish to preview printed imagery with greater regard for printing speed than image quality, select Black and White.

Now we address Quality, one of the most frequently adjusted settings on a printer. Remember this rule of thumb when changing the print quality setting: the more you demand of a printer, the more it will cost and the slower it will print. If you ask your printer to produce a photographic quality document, expect it to take considerably more time and ink. The BJ-200e driver uses a slider to set print quality. The far left setting produces the highest speed but the lowest print quality. Dragging the slider to the far right will demand the highest quality from this printer. Many printer drivers offer print quality selections only as option buttons with levels of print quality measured in dots per inch. Experiment with your own printer driver to find a good balance between optimum print speed and image quality.

Virtually every printer allows you to print in two different directions, called portrait and landscape. Portrait means your printer will print information from top to bottom on a long sheet of paper, such as a standard piece of photocopy paper or letterhead. Use the portrait setting whenever you're printing on paper that is narrower than it is wide. The landscape setting prints information sideways on a long piece of paper. While the portrait setting is best for printing letters, landscape may be best for printing spreadsheets that would be too compressed for easy reading if printed in portrait mode. Remember, most printers print better in portrait mode, so if quality is paramount, try printing in portrait before landscape.

Clicking the About button opens a dialog box telling who made the driver program, the version of the driver, and the company name of the driver's maker, should you wish to contact the company directly. If you subscribe to CompuServe or another information service, you can often get free updates of your printer driver by downloading the newest driver version. Of course, you need to know the version number of the installed driver to determine if an offering is indeed newer than what you have. You wouldn't bother to download version 1.1 of a printer driver if you already own version 1.3.

Many printers offer other features, such as differing methods of printing dots on paper. The baseline types are called halftone settings. There are two basic halftone settings, called pattern and diffusion. Pattern halftoning is a process whereby large areas of similar shades will be printed more effectively, such as the larger slices in a pie chart. If you are printing graphics that contain photo-like imagery, select diffusion, since this halftoning process does a better job with imagery. Diffusion is usually only available when grayscale is selected, not black and white or monochrome.

Many printer drivers can change the intensity of the printed dots on paper. For example, your printer driver may offer radio buttons or a slider for selecting how densely your images are printed. This setting allows you to set multiple printers to produce similar imagery. If this setting were not provided, you would need image editing software to get the image to appear similar when printed on different printers.

About Print Manager

Print Manager, located in the Main group, is a Windows utility program that feeds documents to your printer as quickly as your printer will accept them. Several options control how quickly your documents will print and how responsive your computer will be while they print.

Windows 3.1 is not a true multi-tasking system. When you send a document to your printer, Print Manager intercedes, freeing up your system's processor for other tasks. DOS users will remember how maddening it was to wait for a print job while using a DOS application. You had to wait for the printer to finish before your PC became useful again.

Print Manager lets you print multiple documents while allowing some degree of computer functionality. If you want your PC to run at its fastest during printing tasks, select Background Printing from Print Manager's Options menu and then Low Priority, like we did in Figure 3. If you want documents to print at their fastest at the expense of your computer's vitality (during printing), select High Priority from the Options menu. Windows uses Medium Priority as a default.

It's important to note that these priority settings determine how fast documents print and have no bearing on the quality of the printed document, unlike the printer driver's Print Quality setting you select using Control Panel.

You can expect many differences among printer drivers, but compare these differences to those in the printers themselves. An HP LaserJet printer will clearly produce better-looking output at higher volume than will less-expensive printers. Note that advanced printers offer advanced features that are not offered on less-expensive printers.

When buying a printer, learn about its driver-based options to be sure you make the right choice for your needs. You might be surprised at how flexible a late model, lower-priced printer can be when compared to higher-priced printer that's been on the market for a year or two.

Remember that you can't hurt anything by changing printer settings, especially in Windows' Control Panel. Users often get more out of their printers by experimenting with little-understood printer driver settings, especially in the latest version of the printer driver. After all, a party host may not know which topics work best for conversation until he tries them all. ●

by Robert Mullen

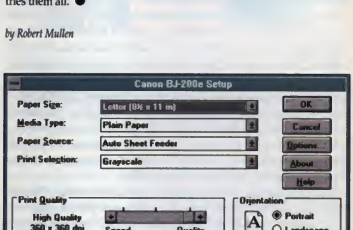


Figure 2: Note the hints offered to users in this driver for the Cannon BJ-200e. Such tips are becoming more common in today's user-friendly marketplace.

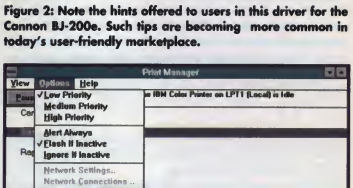


Figure 3: This printer is set to Low Priority to allow other applications to run their fastest during the printing process.

DOS Command Dictionary

How To Use Different DOS Commands

DEL

The DEL command, introduced in DOS 1.0, lets you erase a file from a storage device, such as a hard disk drive or a diskette. You can use DEL with a particular file name to delete one file, or you can use wildcards to delete more than one file. (A **wildcard** is a symbol used to represent a single character or multiple characters in a filename.) In DOS, the * (asterisk) and ? (question mark) are used as wildcards. The asterisk represents a group of characters, and the question mark represents a single character. For instance, Sales.* would represent all files with the name Sales and any extension. Sales.? would represent all files with the name Sales and a one-letter extension.

DEL is one of the commands you'll need to be extremely familiar with, or you'll have a large number of out-of-date files on your hard drive. It's also a command that requires extreme caution because of the potential for accidental deletions, especially when using wildcards. To use DEL to delete a file called Testfile.doc in the current directory, type:

```
del testfile.doc
```

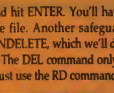
at the DOS prompt and hit ENTER.

DEL has only one parameter, but it's a helpful one if you're afraid of making accidental deletions. The **/p** parameter, available in DOS 4.0 and newer versions, makes DOS confirm any deletions before they occur. To have DOS verify all deletions of files with a .DOC extension in the current directory, type:

```
del *.doc /p
```

and hit ENTER. You'll have to hit *Y* to delete each file and *N* to retain the file. Another safeguard (available with DOS 5.0 and newer) is UNDELETE, which we'll discuss later.

The DEL command only works with files. To remove directories, you must use the RD command.



FORMAT

The FORMAT command lets you to delete all data on a diskette or hard drive, and it prepares the storage device for use by DOS and checks the device for unusable areas.

NOTE: The FORMAT command is the most dangerous DOS command because it can erase your entire hard drive with one keystroke. Obviously, the FORMAT command requires extreme caution, especially with DOS 4.0 and earlier. Make certain you know what you've typed before hitting the ENTER key to confirm the formatting.

FORMAT was introduced with DOS 1.0. Early versions of FORMAT (DOS 4.0 and earlier) are far less forgiving of mistakes than the later versions (DOS 5.0 and newer). FORMAT nearly always forces you to verify the FORMAT command by hitting ENTER or choosing "yes" before it begins erasing data.

With DOS 4.0 and earlier, the FORMAT command destroys information on a storage device, giving you no chance to retrieve it. With DOS 3.1 and earlier, you must specify the particular drive you want formatted, or DOS will format the current drive, which could be your hard drive. It's a good idea to specify the drive with the FORMAT command at all times anyway; you'll be more apt to prevent a mistake.

With DOS 5.0 and later, FORMAT doesn't necessarily destroy the data; it simply leaves it on the storage device and writes over it as you save new files. To regain access to the data, you can use the UNFORMAT command (which we'll discuss later).

You'll usually use FORMAT with diskettes. To format a diskette in the A: drive, type:

```
format a:
```

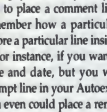
and hit ENTER.

The FORMAT command has numerous parameters available, but most of them aren't of much use to computers containing hard drives. We'll discuss only the more common parameters. The **/s** parameter creates a **system diskette**, which contains important DOS system files and can be used to boot your computer if the hard drive crashes. The **/q** parameter lets you do a quick format on a diskette that has been formatted already. The quick format will save you some time; a complete format on a 1.44 megabyte (MB) diskette requires about 75 seconds, while a quick format takes about one-fourth the time. A quick format erases all data on the diskette, but it doesn't check the diskette for unusable areas. The **/u** parameter (available with DOS 5.0 and newer) causes an unconditional format, meaning you won't be able to recover data with the UNFORMAT command.

If you want to create a system diskette with an unconditional format, you'd type:

```
format a: /s /u
```

and hit ENTER.



REM

The REM command, introduced in DOS 1.0, isn't used at the DOS prompt. Instead, it's used with **batch files**, which are small programs that carry out a series of DOS commands, or **system files**, such as Autoexec.bat or Config.sys that run your system. REM has two major functions: It allows you to place a comment line (or a *re*mark line) inside a file so you can remember how a particular command works, or you can have DOS ignore a particular line inside a batch file or system file.

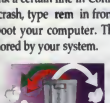
For instance, if you want to change your DOS prompt to display the time and date, but you wanted to keep a copy of the original DOS prompt line in your Autoexec.bat file, you could use the REM command. You even could place a reminder in the file so you remember what each line does. Here is what your original prompt line in your Autoexec.bat file probably looks like:

```
prompt $p$g
```

You'd type the areas in bold to change your DOS prompt to the description above:

```
rem prompt $p$g
rem The above line is my old DOS prompt.
prompt $t$d
rem The above line is my new DOS prompt.
```

The REM command is also handy for helping you fix problems with your computer involving the Config.sys or Autoexec.bat files. If you think a certain line in Config.sys or Autoexec.bat is causing your system to crash, type **rem** in front of the suspected line in the DOS Editor and reboot your computer. The REM command will cause the line to be ignored by your system.



UNDELETE

If you make an accidental deletion, the UNDELETE command (available with DOS 5.0 and newer) *might* be able to help you recover the deleted files. *UNDELETE only works if you haven't already saved a new file to the space previously occupied by the deleted file on the hard disk.* Because you don't know exactly where on the disk DOS is going to save a file, you can never be sure if or when the original file will be overwritten. Your best hope for recovering the file is to use the UNDELETE command as soon as possible after the accidental deletion.

To recover a deleted file called Novsales.doc from the current directory, type:

```
undelete novsales.doc
```

and hit ENTER. If you deleted a series of .DOC files, and you want to recover all of them, you can use wildcards with the UNDELETE command. Type:

```
undelete *.doc
```

and hit ENTER. UNDELETE will ask whether you want to restore each file, and it will ask for the first letter of each file. Requiring you to supply a letter serves as a safeguard so someone can't recover files that you've deleted without knowing the full file name.

UNDELETE has a number of parameters. The most useful is the **/list** parameter, which lists all files available to be restored. In the listing, the first letter of the files is replaced by a question mark. Any files DOS can't recover, because their disk areas have been overwritten by new files, are marked with two asterisks.

UNFORMAT

While the UNFORMAT command, introduced with DOS 5.0, sounds like the computing messiah mistake-prone DOS users have been waiting for, it isn't the perfect solution to formatting errors. The best solution is prevention: use the FORMAT command with great care.

UNFORMAT sometimes can help you recover data from a diskette or hard drive you accidentally formatted, but not always. If you've saved some new files onto the diskette, you may not be able to recover all of the original files. And whenever you use UNFORMAT on a diskette, any new files you saved on the diskette are lost. If you accidentally format your hard drive, you'll lose all of your data—including DOS and the UNFORMAT command. So, unless you have a system diskette containing the Unformat.com file on it, you can't use UNFORMAT to save the hard disk data. When creating a system diskette, DOS doesn't automatically copy the Unformat.com file, meaning you'll need to copy that file manually. The same diskette should have current copies of your Autoexec.bat and Config.sys files.

To create such a system diskette, place a blank diskette in the A: drive and type:

```
format a: /s
```

and hit ENTER. Then use the COPY command to copy the additional files to the diskette manually. The Unformat.com file is in the DOS directory.

Even though it's not a cure-all, UNFORMAT will work in most cases, and it's an extremely vital command. (*NOTE: UNFORMAT will not work if you used the /u parameter with the FORMAT command.*) To unformat a formatted diskette in the A: drive, type:

```
unformat a:
```

and hit ENTER.

You can use the **/test** parameter with UNFORMAT to test the diskette and make sure the files can be recovered. When you use /test, no files are restored, but DOS goes through the motions of restoring files. It will display a "Simulation only" message to show you're only running a test. If the test works correctly, you then can actually run the UNFORMAT command. ●

by Kyle Schurman

Checkmate!

Chess Games For DOS

There's more to chess than checkmate! Viewed as a courtly power struggle between two warring kingdoms, this game promotes concentration and logical thinking. Victory depends upon anticipating your opponent's moves, landing tactical blows, careful planning, and rigorous analysis. For centuries, chess has captivated some of the best minds in the world. Its intricate puzzles constitute the subject of hundreds of books.

Trouble is, it's not always easy to find a willing opponent. Luckily, several electronic chess programs are available. Each one has unique features, but all let you play nimble adversaries at a time convenient for you. This month, *PC Novice* examines three popular MS-DOS chess packages designed to engage your mind and improve your chess skills.

(NOTE: These chess programs require a VESA-compatible video driver that must be loaded before you launch the game. If your video card has no VESA driver, call your video card manufacturer to obtain one.)

Bobby Fischer Teaches Chess

Bobby Fischer is to chess what Michael Jordan is to basketball. This international chess genius can slam dunk an opponent's king with more finesse than a Japanese chef wielding a ginzu knife. Winner of the United States Chess Championship by age 14 (the youngest player ever to do so), International Grandmaster the following year, and the first American to win the coveted World Chess championship, Fischer is reputed to be the strongest player the world has ever seen.

In *Bobby Fischer Teaches Chess* (BFTC), Fischer brings his genius to the computer screen. Children interested in learning the game and more experienced players seeking to improve their skills will enjoy this program. This multimedia CD-ROM has colorful animated graphics, voice-over narration, and an intuitive interface. While not as animation-rich as Interplay's *Battle Chess 4000* (see below), it nevertheless has a lot to recommend it.

Based on a book of the same title (co-authored by Stuart Margulies and Donn Mosenfelder), it features 300 self-paced, interactive lessons developed with Fischer's help. The lessons explain the rules of the game; the elements of checkmate; back-rank mates, defenses, and variations; displacing defenders; and attacks on enemy pawn covers. All strategies are based on Fischer's insights.

The illustrated chess lessons are sequenced, building on moves and principles learned previously. The program grades your progress by evaluating your answers to questions based on course content. Unfortunately, an incorrect answer may elicit a humiliating round of laughter instead of a simple, "No, try again."

A digitized version of Fred Wilson's "Picture History of Chess" provides more than 300 photographs and commentaries describing important events in the game's development. Unfortunately, there aren't any click-on links to cross-references, search capabilities, or bookmark options; you also can't output book contents to a diskette or printer.

The game-playing component lets you test your abilities against the computer at 10 levels of play (with or without a timer) or watch as the computer competes against itself. A Takeback option lets you undo your last move. A Hint option shows your best move based on the current game situation. If you check the Show Book Moves option, the game's chess engine tries to play a series of predefined moves at the beginning of each new game.

The program's game board has a two-dimensional (2-D) rather than three-dimensional (3-D) look and feel. Program menus and important information about a game currently in play display in English, French, or German. Unfortunately, move explanations appear in cryptic shorthand codes that are difficult to understand. While you cannot play against another human, you can set up the board to play any legal position so you can solve particular chess problems or test different endgame positions. An optional, advanced Author mode lets teachers or chess coaches create custom lessons and chess tutorials.

The lessons in *Bobby Fischer Teaches Chess* teach players to analyze their moves during game play.

Players can study 570 Fischer matches by watching each game replayed in 2-D or 3-D mode. You can manually control contest playback (move by move) or choose the Animate Game option to watch moves made automatically. Clicking the Play Chess option during game play jumps you to a chess board to play out the current position, but there's no way to return to the Fischer match.

BFTC won't develop your chess-playing skills overnight; for that you need practice. But if you're interested in learning how a chess master thinks, BFTC teaches you how to analyze chess problems and strategies to the point where you can KO most, if not all, of your chess opponents.

Bobby Fischer Teachers Chess
$39 (street price)
Mission Studios
(708) 991-0598
Interplay Productions (distributor)
(800) 969-4263
(714) 553-6678

Kasparov's Gambit

Kasparov's Gambit (KG) also offers coaching instruction and chess-playing options. Its 121 tutorials were developed with Gary Kasparov, an internationally recognized chess player who won the World Chess Championship in 1985. Kasparov appears in "talking head" video clips to coach players through board moves. You simply click on the "?" to obtain a game-playing hint or wait for Kasparov to comment on your moves as you play. You can play against 16 opponents ranging in skill from Grandmaster to klutz.

During game play, an Analysis window shows Kasparov's thinking process for the

current position written in easy-to-follow, plain English. A Move List window displays all game moves to the current position, letting you return to or advance from a position. You can force an opponent to move, set time limits, switch sides during play, and print a game's "move" list. KG also includes a variety of opening strategies (complete with analysis) that you may elect to play to improve your skills.

KG was released on floppy diskette in September 1993; it was recently re-released on CD-ROM as a "double-product pack" teamed with *Grand Slam Bridge II* at a terrific price. While nothing new was added to improve the chess engine, KG still has much to offer, including a relatively simple interface with menus and click-on options. For example, select Tutorials from the Coach menu, and a Choose A Game window appears. Tutorial themes include Advanced Rules, Checkmating Patterns, Drawing Patterns, Endgame, Openings, and Tactics. Tutorials cover basic moves but don't quiz your mastery of concepts.

When you click on a tutorial, a brief text description appears in the Choose A Game window. Click the OK button to load the tutorial into memory; controls in the menu bar let you advance the lesson one frame at a time. Beginners might find these tutorials a bit confusing at first. They use algebraic notation to describe chess moves, and the letters for board columns (files) and numbers for rows (ranks) do not display on-screen. Online documentation provides an illustration of board coordinates, but you cannot access the manual from within the program. The "Installation & Game Play Manual" and "World Championship Chess Guidebook" can be viewed (but not from within the program), printed, or purchased from Electronic Arts for $5.

The Famous Games option in the Coach Menu lets you watch replays of 500 celebrated tournaments featuring matches between chess greats. You can advance one move at a time or let the Animate option replay a game automatically (the play speed is adjustable). A Quiz option tests your knowledge by presenting problems based on the replays in Famous Games. An Analysis box provides comments on the moves; when text is highlighted in green, you can click on it for a glossary definition.

Unlike the Fischer program, KG won't let you create chess tutorials. Moreover, after

In *Kasparov's Gambit*, you can click on the "?" for a hint for your next move.

you've worked with Tutorials and Famous Games, it may be difficult to start a new game with an opponent that you select because the Choose Opponent command in the Game menu is dimmed. To bypass this, select Resume Game from the Game menu, then click on either Resume Old Game (if there's a saved game you want to return to) or Copy New Game to begin a new game with an opponent of your choice.

This program's tutorials, saved game analyses, and challenging opponents will develop your chess-playing skills. However, chess novices may be better off with the Fischer program initially, later using KG as an "advanced course."

CD-ROM Classics: Kasparov's Gambit
$14.95 (bundled with *Grand Slam Bridge II*)
Electronic Arts
(800) 245-4525
(415) 571-7171

Battle Chess 4000

Interplay's *Battle Chess Collection* contains four chess games on one CD-ROM: *Battle Chess*, *Battle Chess Enhanced*, *Battle Chess 4000*, and *Battle Chess II Chinese Chess*. This review examines Battle Chess 4000 because, with a copyright date of 1992, it's the "newest" one in the collection. It's also the only electronic chess game in this round-up that lets you challenge either the computer or a human opponent. You'll find multiple levels of play, an opening library of more than 300,000 moves, and many other features. However, this game's real appeal comes from its exceptional animation and sound.

Picture a futuristic game board with space age chess pieces consisting of alien creatures, swashbuckling captains, mad scientists, and robots. When one piece captures another, the two enemies engage in dramatic 3-D mortal combat, complete with realistic sound effects. The visual spectacle (created from digitized clay model figures) is amazing. However, if you're serious about chess, you'll find the animations quickly become tedious, slow down game play, and break your concentration. (These distractions, however, are turned off when you switch to a 2-D board.)

Like the other programs, Battle Chess 4000 has optional game-playing hints. It features 10 playing levels, an autoplay mode where it competes against itself, and a Modem mode that lets you challenge an opponent over a phone line. You can set up and play any position, switch sides during game play, take back a move, and more. The program doesn't offer tutorials, move analyses, or classic games for study. But if you revel in *Doom*-like scenarios, you'll find Battle Chess 4000 entertaining.

Unless they're also into games like *Doom*, die-hard chess players may quickly tire of *Battle Chess 4000's* slick animation and sound.

Battle Chess Collection
$40 (street price)
Interplay Productions
(800) 969-4263
(714) 553-6678

For beginners, Bobby Fischer Teaches Chess, with its tutorials and game-playing components, is the hands-down winner. Serious players, however, might want to use Kasparov's Gambit for game playing and Fischer for review. For a combined price tag of a little more than $50, Fischer and Kasparov just might help you beat that chess whiz in your family. ●

by Carol S. Holzberg, Ph.D.

Start Your DOS Programs With Buttons

Buttons For DOS 3.6 is a shareware, mouse-driven menuing system that's entirely graphical in nature. What makes Buttons different from its peers is the ease with which you create your own menu programs that utilize customizable buttons. While the screens that hold your buttons are referred to as menus, Buttons doesn't use traditional menus to run your DOS programs. Instead, a menu is a screen displaying separate buttons that can launch individual programs in a directory. You even can start an entire directory from a single screen with one mouse click. Click on a launch button to run a program, select a button with a door on it to head to another screen with buttons for a related subdirectory, or click on another button to return to the main screen.

Automatic Creation

Best of all, Buttons will create these screens full of three-dimensional (3-D) launch buttons with minimal involvement on your part. Buttons will look at an entire directory on any drive and display all of the launchable programs, then allow you to pick and choose between the programs for which you want to create buttons. This automatic creation of buttons is a godsend for users who don't relish the ins and outs of button coloration and text formatting.

While Buttons lets you customize how the buttons look once you've created them, you don't have to make these tailoring choices until after the program has created the screens and buttons. Each button that's created is displayed upon a color bitmap of a nature scene or other view.

Buttons excels at giving you the ability to select the font, font color, button color, and position of each button on the screen. These buttons can indicate their function on the button face. For example, buttons that launch programs have an arrow labeled with the word Run. Below each Run arrow, the name of the program is displayed.

How It's Organized

When you first install Buttons, you're prompted for some simple information, such as the video mode you want to use. While this question sounds daunting, you simply select VGA to avoid complications, and Buttons works just fine. The VGA video mode selection gets you up and running, but won't give you maximized viewing quality.

This product is a challenge to install. If you have any questions, you can call technical support, as we did, to be walked through the installation process. The technical support for Buttons is excellent, even after normal business hours.

Buttons has photo-quality wallpaper, and you can attach Sound Blaster .VOC files to buttons, to be heard when you click on a button. You'll need a Sound Blaster-compatible sound card to utilize the multimedia audio effects of this DOS product. This audio support makes Buttons entertaining, as does the free screen saver that comes with the program. Buttons also has an instant DOS command function. Start typing, and a DOS prompt appears on-screen. Press RETURN, and Buttons executes the DOS command.

This product has a button editor, a wallpaper editor, and a text editor that lets you customize your Buttons setup. Buttons isn't memory resident, so it won't steal memory from your DOS games when you're not using it to launch programs. The high-quality graphics of this program are another highlight, though **VESA** VGA graphics are needed to take full advantage of this highlight. (*VESA, the Video Electronics Standard Association, has set a standard for high-resolution video devices, such as monitors. Devices following this standard have a better chance of being compatible.*)

What's Shareware?

Buttons for DOS is shareware, which means that you can try it before you buy it. The unregistered version of Buttons only allows you to use five buttons on the first screen. Once you register the product, however, the following features are available:

- Up to 50 buttons per screen
- Unlimited number of screens
- You can save edited buttons
- You can save edited wallpaper
- You can import .PCX files to SVGA wallpaper
- Unlimited free phone, E-mail, and mail support
- Receive upgrade notices via first-class mail
- Receive future upgrade discounts

If you like the idea of removing DOS command line text from your life, Buttons for DOS is a slick approach for launching your DOS programs. ●

by Robert Mullen

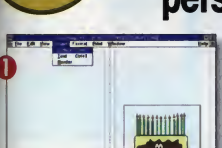
For More Information:

Buttons For DOS 3.6
Rockland Software Productions
6510 Woodley Rd.
Clinton, MD 20735-2676
(301) 868-0372
$35 registration (suggested retail price)

$39 Value **FREE!** to the first 250,000 customers

This sophisticated software turns your PC into your own personal printing press.

Includes more than 60 graphic images!



It's as easy as 1, 2, 3. First, insert art.

Next, add text.

Format text, print and you're done!

It's easy to create your own posters, cards, banners and more with Greetings for Windows. A $39 retail value, it's yours FREE if you order now!

Tens of thousands of satisfied customers turn to Greetings for Windows to create their own professional-quality cards, posters, banners and more. Now, you can have this sophisticated program—not for $39, not for $29—but FREE! (You pay just $8.95 shipping and handling.)

Microsoft Windows-compatible software—free!

Greetings is NOT shareware. It is NOT a limited-demonstration program that requires you to pay more to get the real thing. No, Greetings is a complete, high-performance program that you'll be proud to add to your software collection!

It's so easy to use. Just select a layout, insert any of the more than 60 included graphic images, customize your text and print! That's all it takes to create holiday greetings, thank-you cards, business materials and more. Your options are virtually limitless!

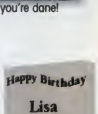
"I've already found numerous uses for the program. It works great. Fellow workers were also impressed."
—B. Thomas, Lawton, OK

Why is Greetings free?

It's simple. We want you to become one of Parsons Technology's more than 2 million loyal, satisfied customers. And giving you free software is one of the best ways we know.

You'll love Greetings, so we're sure you'll also turn to many of our more than 50 other software titles for affordable, high-performance solutions in the future.

Order now and we'll rush you a great way to create your own posters, cards, banners and more. Greetings for Windows!



But hurry—this offer is limited to the first 250,000 orders! For your FREE* copy of Greetings for Windows, call

1-800-710-1222

Operators are standing by 24 hours a day, 7 days a week.
Or fax the attached order form to 1-319-395-7449
or mail it to the address below.

☑ Yes! Send me Greetings for Windows FREE!

Please add $8.95 for shipping and handling ($11.95 for Canadian orders and $29.95 for all other orders outside North America). No purchase orders, please. Includes detailed User's Guide and expert technical support.

Name _____

Address _____

City _____ State _____ Zip _____

Daytime Phone ( ) _____

Evening Phone ( ) _____

Disk Size: ❑ 3.5" or ❑ 5.25" *(We will ship HD 3.5" disks if boxes are unmarked.)*

Payment Method: ❑ Check or Money Order enclosed ❑ Visa ❑ MasterCard
❑ Discover ❑ American Express *(No purchase orders, please.)*

Card # _____ Exp. _____

❑ Please just send me your FREE software catalog!

PARSONS TECHNOLOGY
An Intuit Company

Product Development Center, One Parsons Drive, Hiawatha, IA 52233

Your priority code is 771305G

SYSTEM REQUIREMENTS: Greetings for Windows requires an IBM® or compatible PC, 4MB RAM, Microsoft® Windows 3.1 or later running in standard or enhanced mode, and 4MB hard drive space. Mouse required. Shipping and handling are non-refundable. Greetings is a trademark of Parsons Technology, Inc.

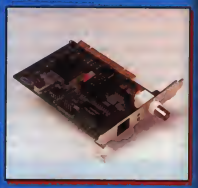
Your Reliable Partner in Networking

GE2000II Series

- Jumper & Jumperless NE2000 Compatible Card

Personal NetWare

- Novell Personal NetWare & NE2000 Compatible Card in one package



GE2500

- PCI Local Bus Card

Genius LAN

GH4080 Palmtop size 8 Port 10BaseT Hub

yes NetWare Tested and Approved

- supports 8 UTP workstation ports
- conforms to IEEE 802.3 standard and repeater specification
- 10 Mbps transmission rate
- provides LEDs indicating collision/ partition/ traffic for network segment
- allows data recovery without signal distortion

COME SEE US at

NetWorld + InterOp 95, Las Vegas / Booth # 1433
Windows World 95, Atlanta / Booth # M6818
PC Expo 95, New York / Booth # 3680

POCKET LAN • PCMCIA Adapters • HUBS • REPEATERS • WIRING EQUIPMENT

Genius
KYE International Corp.
(800) 456-7593

PH (909) 923-3510 • FAX (909) 923-1469 • TECH SUPPORT (909) 923-2417 • BBS (909) 923-8454
KYE International Corp • 2605 E Cedar St • Ontario • CA • 91761 • USA

PC Translation Programs

Have you noticed that the world is shrinking? Technological advances and a global economy have increased the chances that you will come in contact with someone who does not speak your native language. The ability to communicate in other languages is an important asset.

Translation software makes that communication easier and less expensive, but if you envision being able to press a few buttons to produce a perfect translation, be forewarned that computers have not replaced humans in the translation process. Translations can serve as first drafts to be reviewed by a professional translator, or they can be used in situations when a rough translation is sufficient to get the idea across. Some knowledge of the languages you are translating is helpful. You also may want to review sentence structure, in case you're not familiar with terms such as past and present participles, conjugated verbs, and prepositions.

A Growing Market

As the power of personal computers has increased, translation software has moved from the realm of mini- and mainframe computers and has become more accessible to the average user. The number of vendors and available products is still small; 85% of the personal computer translation market is held by Globalink Inc., which acquired its main competitor, Microtac Software, in December 1994.

Globalink offers three product lines. The *Language Assistant* series for general consumers sells for $59; *Power Translator* for business users sells for $129; and *Power Translator Professional* for large corporations or governmental agencies sells for $600. For this article, we reviewed *Spanish Assistant, German Assistant,* and *Power Translator Deluxe CD-ROM Edition*. We also looked at Intergraph's English-to-Spanish version of *Transcend*, which sells for $495, and *EZ JapaneseWriter* by EJ Bilingual, which costs $795. Both are newly released products.

Breaking Language Barriers

We were assisted in our translations by people fluent in the languages with which we were working. For our first effort, we translated a business letter from English to Spanish using Globalink's Spanish Assistant and Power Translator and Intergraph's Transcend. In the letter, we were sending a brochure and a sample management training video to a prospective client. Our results included both an automatic translation, generated by the computer, and interactive translations where we manually adjusted the computer's translation.

Some sentences translated well, such as "Thank you for your time and consideration" to "Gracias por su tiempo y consideración." However, many sentences were difficult to understand. Common errors included incorrect word order and sentence structure, the wrong verb tense, mismatched gender and number, and incorrect choice, elimination, or insertion of prepositions or articles. Manual intervention was required for ambiguous pronouns to avoid instances of he/she/it/you in the translated text. Although vendors advertised their products as being intuitive, many problems occurred when translations were too literal, translating word by word instead of looking at the context of the sentence. All three programs had translation errors, although many were probably caused by not spending more time editing and retranslating our document. Subsequent translations would be better and faster with more familiarity with the software and customization of the language dictionaries.

Word choice in your original document is important. Words that seem common to you may not be easily translated to another language. Suffice to say, we probably didn't sell our prospective client any of our "employee sensitivity" videos. Another term that didn't translate well was our "outstanding results," which ended up as results that were placed on hold or moved away to another location.

Sometimes words had multiple meanings, and the best choice wasn't always used. For example, when asking the potential client to review the enclosed materials, Power Translator and Transcend correctly used "revisar," but Spanish Assistant in automatic mode used "repasar," which means review in the sense of rehearsing something. The computer alone can't be blamed for mistakes: in the Spanish Assistant's interactive mode, we selected a word to describe our training videos that was more appropriate for referring to the training of animals or pets than for employees.

Translation horror stories always include the inadvertent use of a bad word, and our experience wasn't immune. In trying to say that our videos were "a must" for management executives, Spanish Assistant used the word "moho." Depending upon what part of the Spanish-speaking world you're from, we were in essence telling our prospective client that our videos were anything from a fungus to excrement.

¿Habla español?

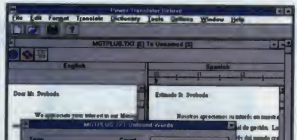
Most translation software can translate in two directions (i.e., English-Spanish and vice versa) within the same package. A notable exception is Transcend. Intergraph will be releasing bidirectional versions, at the higher price of $795, but we only had their English-to-Spanish version.

We translated a brief letter from Spanish to English (see sidebar called "De Español A Inglés") using Spanish Assistant and Power

Translator. We discovered that it makes a difference if you omit accents in the original letter. For example, the word "artículo" means article; without the accent, it means "I articulate." Without the accent, the sentence "Please send us a copy of the article" translated as "Please send us a copy of the I articulate."

Some translations, such as "I have enjoyed to speak with you" were awkward, but understandable. Some phrases were impossible to convey: "It is yours to keep" translated as "It can be remained with her," and "One could keep she." Even though "hoy dia" is commonly used in Spanish to refer to "today," Spanish Assistant translated it as "nowadays," and Power Translator came up with "today gave."

We used the software dictionaries to assist us in changing the Spanish letter until it translated into English correctly. We ended up with a perfect letter in English but only because we tortured the Spanish and used the wrong tense. For example, instead of "he disfrutado hablar," we used "yo disfrutado hablando," which doesn't make sense in Spanish but translates just great into English. The need for incorrect language input to produce correct output indicates that there are limitations to computer-generated language translations.



During translation, *Power Translator Deluxe* creates a list of unfound words, providing an easy way to add words to your language dictionaries.

Viele Gebräuche (Many Uses)

Computer translations can be used for more than composing correspondence. Globalink estimates that half of its software users are monolingual, and some have devised creative ways to implement the software. An English-speaking business owner, for example, uses a translation program to communicate with his Spanish-speaking employees. The audio capabilities of Power Translator enhance this type of communication.

You also can translate foreign publications, faxes, or text downloaded from the Internet or commercial online services. Businesses and individuals needing to keep up with foreign events or perform research can scan pages into a computer or import text files and translate the documents into their native language. While the translation probably won't be perfect, it gives you a general idea of the topic. The process also can screen documents and narrow the number that need more sophisticated translation.

We tried this with a product press release written in German, with disappointing results. Many of the words were not in the software dictionaries and were unrecognizable. Because we were familiar with the product being advertised,

De Español A Inglés

Translating a letter from Spanish to English had some awkward, although understandable, results. Both translations were automatically generated by the computer and underscore the need for human intervention to edit and polish the translation.

THE ORIGINAL LETTER:

Estimada Joan:

He disfrutado hablar con usted en el telefono hoy dia. Una serie de traducciones software ha sido enviada a usted, y se puede quedar con ella.

Por favor mandenos una copia del artículo para el archivo. Llamenos si tiene algun problema o pregunta.

Gracias.

Sinceramente,

D. Hanson

SPANISH ASSISTANT

Dear Joan:

I have enjoyed speak with you in the telephone nowadays. A series of translations software has been sent to you, and one could keep she.

Please send us a copy of the article for the file. Call us if he/she/it/you has any problem or question.

Thank you.

Sincerely,

D. Hanson

POWER TRANSLATOR

Dear Joan:

I have enjoyed to speak with you in the telephone today gave. A series of software translations has been sent to you, and it can be remained with her.

Please order us a copy of the article for the file. Call us if any has problem or question.

Thanks.

Sincerely,

D. Hanson

Your translated words are an unfinished result, requiring human intervention to turn them into readable text.

we could figure out the translation, but it would have been difficult otherwise. For instance, we ended up with the following sentence:

"With (product name) for Windows it is now possible, Chinese and Japanese texts out of all current Windows-programs to generate and on all printer supported of Windows to spend."

We concluded that the sentence really meant that the product could display and print the text of Windows programs in Chinese and Japanese. It's hard to imagine trying to decipher an entire magazine, or even a complete article, in this manner unless you have a remarkable talent for reading between the lines.

Reaching Past Europe

Most translation efforts have concentrated on European languages, but others exist for more complex languages such as Japanese, Chinese, or Russian. We reviewed EZ JapaneseWriter for Windows from EJ Bilingual Inc. and had the same difficulties with sentence structure and word choice. Without the original English accompanying the translation, our readers couldn't make any sense of the Japanese version.

Most of the letter didn't translate into anything understandable. As an example of the better part of the translation, the sentence "Thank you for your time and consideration" became "Between your time and consideration thank you." The computer substituted inappropriate words that gave unintended meanings. The sentence "The results have been outstanding, as you can see from the enclosed testimonials" translated into "You enclosed awards I can see result unfinished." Actually that describes the translation process fairly well. Your translated words are an unfinished result, requiring human intervention to turn them into readable text.

Product Overview

Most vendors admit that computer-generated language translations have limitations. "Machine translation is intended to expedite, rather than eliminate, the work of professional translators, while providing the average consumer with access to multilingual environments," says Kelly Rae Mullins, Globalink's public relations manager.

Even Dr. Ryozo Kimihara, executive vice president of EJ Bilingual Inc., has to admit that "Your first translation could be terrible." It is rare that you could translate a document quickly and accurately without some time-consuming, post-translation editing. Our initial results would have been less disappointing if we had built our dictionaries and performed more editing. Expect to invest some time building language dictionaries, polishing your documents, and learning the best way to phrase your original documents to optimize the translation's quality.

Globalink's easy-to-use products stand head and shoulders above the others we looked at. User-modifiable bilingual dictionaries, grammar assistance, verb conjugations, and other reference tools help in translations. The user manuals are well-organized, easy to read, and include helpful grammar references. The split screens, showing both languages being worked with, are convenient, and printouts can contain one or both languages. Text can be imported from an existing file or entered directly into the translation software.

Tips For Better Translations

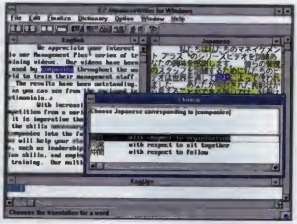
The computer cliche, "garbage in, garbage out," holds true for translation software. There are several things you can do in your original document to allow for an easier and more accurate translation.

- Use a spell checker and grammar checker before translating.
- Make sure that necessary accents are included in your text.
- If you are scanning documents, make sure that your OCR (optical character recognition) software recognizes accented characters.
- Carefully word your document to avoid idioms, slang, and unnecessarily complex words or sentences. For example, it would be better to write "it rarely happens" instead of "once in a blue moon."
- Whenever possible, avoid words that have more than one meaning (i.e., instead of writing that someone is the "head" of a company, use the word "director" or "president").
- Avoid contractions; it is better to use "Mary is" rather than "Mary's."
- Words are often implied in English but need to be included when translating to another language. For example, it is better to write "I know that he works on Saturday" rather than "I know he works on Saturday." One-word verbs, such as "arise" and "return," translate more easily than "get up" or "come back."
- Avoid text in all uppercase letters (unless required in specific instances, such as EJ Bilingual's package).
- Avoid using complicated punctuation such as parentheses or long dashes.
- Use clear, formal writing to achieve the best translations. While it is easier to write in the informal manner used in conversations, the loose grammatical style will cause problems when translating.
- Always choose concise, straightforward text over wordy or convoluted sentences.
- Always include a copy of the original document, in case the recipient has questions regarding the translation.

Remember that even your best efforts may be misunderstood because of the complexity of languages. Spanish varies between Spain, Latin America, and the United States, just as the Portuguese spoken in Portugal is different than that used in Brazil. Even within the same country, you have different dialects and slang. Many languages also use different forms depending upon the gender of the speaker and the person spoken to. In Japanese, there are polite forms of words used when speaking to one's superior. The list of exceptions and considerations is endless. Rest assured that there's a good reason why professional translators charge what they do for their services. ●

Translations can be done automatically by the computer or interactively, sentence by sentence. Error marking identifies any untranslated words, letting you polish the document with editing tools. Words and phrases, such as brand names, can be marked so that they are ignored for translation purposes.

Globalink offers its inexpensive, entry-level Assistant series in English to and from Spanish, French, German, and Italian. The more sophisticated Power Translator and Power Translator Professional series, which contain audio capabilities, are available in English to and from Spanish, French, and German. The Power Translator Professional series contains unique subject dictionaries for different industries such as banking or medicine. Globalink also offers other translation services, and every Globalink employee we talked with was helpful, informative, and enthusiastic.



If there is more than one translation for a word, *EZ JapaneseWriter* highlights the word in yellow.

Intergraph's Transcend is a 32-bit version of a UNIX-based machine translation system. The first versions, released this spring, are inconveniently unidirectional and include English to Spanish, Spanish to English, English to French, and French to English. Other languages and bidirectional translators are scheduled for later release.

We had problems with Intergraph's product from the start. Our beta copy was unusable, giving us obscure error messages such as "unhandled exception detected." We were sent a complete package, and it then took calls to five different numbers to get a price for the software, making us wonder if the average user gets the same telephone runaround if they need assistance. Their misleading advertising hype gave the impression that a simple process of clicking a few buttons would result in a high-quality translation. The disorganized user manual included a meager glossary, an incomplete ANSI code table (for entering foreign characters), and four screen displays to use as a reference (three of them for the Help feature).

The Transcend translation process was slow, confusing, and disorganized. Unless you highlight selections to be overwritten, the translation is saved to a file you have to retrieve, an inconvenient alternative to displaying the original document and the translation on a split screen. If you don't work directly from *WordPerfect* or *Microsoft Word*, you don't see the original document or the translation on-screen while translating.

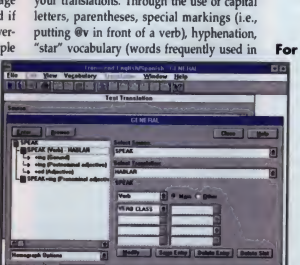
EJ Bilingual was finalizing their documentation for EZ JapaneseWriter when we did our review. As the cover letter stated, "We have been struggling with bugging out the problems and documentation." We hope that they concentrate on "bugging out" their English translations. A user manual written in broken, incorrect, and misspelled English, with odd suggested usages such as "She was depraved by her father-in-law" doesn't instill confidence in their software. The sample files, provided to compose business letters, were full of awkward sentences, such as "Our company apologizes deeply to you for causing your company a trouble about this."

EJ Bilingual does describe ways to improve your translations. Through the use of capital letters, parentheses, special markings (i.e., putting @v in front of a verb), hyphenation, "star" vocabulary (words frequently used in the Japanese business community), and other techniques, you can improve your results. The documentation also describes how to use Romaji, a way of phonetically converting English to Japanese. Romaji can be converted to Hiragana or Katakana (used for foreign or borrowed words) and then to Kanji (formal Japanese). A split-screen display lets you see the original and translated document. Words with multiple meanings are highlighted in yellow to make it easier to edit for the correct meaning. The program shows promise, but the translation process involves a lot of time and effort to produce understandable results.

Even though computer translations are imperfect, they are a timesaver for professional translators and users who don't need absolute accuracy. The translations provide assistance in deciphering foreign documents and can help users become familiar with another language. We recommend Globalink's products, but no matter which language translation program you choose, keep in mind that the translation process is not quick, easy, or perfect. ●

by Diane K. Walkowiak

Special thanks to Marina, Hispanic Community Center, Lincoln, Neb.; Ms. Ryoko Sasaki Shuss, Lecturer/Project Director, Kawasaki Reading Room for Japanese Studies, University of Nebraska-Lincoln; and Mr. S. Kiyama, Kawasaki Motors Manufacturing Corp., Lincoln, Neb.



***Transcend* lets you add, modify, delete, and review words and phrases in its dictionaries.**

For More Information:

EZ JapaneseWriter for Windows
EJ Bilingual Inc.
(310) 320-8139

Spanish Assistant
German Assistant
Power Translator/Spanish
Globalink Inc.
(800) 255-5660
(703) 273-5600

Transcend
Intergraph Software Solutions
(800) 222-9242
(205) 730-9832

Try our 3-Month Software Subscription...

If you're not totally convinced Softdisk is the Best Value in Home Computing Software, it's Free!

What Is A Softdisk Subscription?

Each month, Softdisk publishes a minimum of 5 original software programs on disk. We call them "issues." These monthly issues are then sent out to our more than 25,000 subscribers.

What's on an issue?

Each issue is chock-full of great games, educational quizzes, databases, puzzles, utilities, clip art, fonts, and more. Why not take a look for yourself! Pictured at right is a sampling of programs from the last 3 issues of *Softdisk for Windows* (the 3 issues shown are available as back issues).

Where does the software come from?

Our programming staff writes 3 of the 5 programs on an issue. To complete the balance of an issue, we rely on outside programmers. Each month we receive over 100 submissions from outside programmers. We screen the programs and then pick the top 2. Once we have the 5 programs for an issue, we put them through a 21-step quality assurance testing process to make sure the programs are user-friendly and error-free. We DO NOT allow shareware or public domain software on our disk. There are never additional fees to pay. The programs we publish are all completely legal, fully registered programs for you to use and enjoy.

Can a novice use the programs?

Absolutely! All 5 programs come on an easy-to-install disk. There are no big thick manuals, just simple straight-forward instructions provided on the disk with each program.

How much is a subscription?

A 3-month subscription is only $19.95. During the 3 months, you'll receive a total of 15 programs. That comes out to only $1.33 each! And every Softdisk issue comes with this guarantee...

Softdisk Guarantee

Each issue comes with a 30-day 100% money-back guarantee. If for any reason you are dissatisfied with an issue, you may return it for a prompt and courteous 100% refund. You can't lose!

Order by September 30, 1995 and you'll receive a special bonus!

If we receive your order by September 30th, we'll include with your subscription a *FREE bonus disk of software* (a $20 value). The bonus disk is yours to keep, even if you return the issues. Just think, all the exciting games, handy utilities, useful productivity programs, entertaining educational titles, a risk-free guarantee and a free bonus. You can't beat that. To order, fill out the attached order form and send it to us or call 1-800-831-2694. Order your subscription now!

❑ **YES!** Please rush my free gift and start my 3-month subscription for only $19.95* postage paid. I understand each issue has a 30-day, 100% money-back guarantee, and I am under no obligation to continue beyond three months.
*International rate: $22.95 US or $29.95 CAN funds. Louisiana residents add 4% sales tax.

Please check: ❑ DOS ❑ Windows ❑ Macintosh
Payment: ❑ Check/money order ❑ MC/Visa ❑ Discover ❑ AmEx
Card # _____ Exp. Date _____
Signature _____
Name _____
Street _____
City/Province _____ State _____
Country _____ Zip/Mail Code _____

Order Toll Free 1-800-831-2694 or 1-318-221-8718

Mail to: Offer #PCN065 • Softdisk Publishing • P.O. Box 30008 • Shreveport, LA 71130-0008

CPCN06 4/95

System Requirements: Windows—386 or better, 4 MB of RAM, Windows™ 3.1, VGA or better graphics, 3.5" HD drive. **DOS**—386 or better, 2 MB of RAM, DOS 3.3, VGA or better graphics, 3.5" HD drive. **Macintosh**—a color Macintosh® with 4 MB of RAM and System 7+.

A New Way To Shop For Tunes

Have you ever purchased a compact disc or cassette based on a good song you've heard, only to find out that the rest of the album was junk? Sure, some music stores let you listen before you buy, but wouldn't it be less of a hassle to do that without leaving home? And wouldn't it be great if you could make your selections on your computer, order by E-mail, and have the music delivered overnight to your door? *The MusicNet CD-ROM* by MNI Interactive lets you do just that.

MusicNet is an interactive, music-previewing-and-purchasing service that lets you preview album tracks, watch video clips, read about artists and albums, and order current releases from a wide range of music styles. The CD-ROM provides an easy, informative, and entertaining way to shop for music from your home.

Single issues, as well as year subscriptions, of The MusicNet CD-ROM are available for Windows and Macintosh users. Each issue features 250 newly released albums by major and independent labels and covers different categories such as rock, country, urban, jazz, pop, and more.

Subscribers automatically receive a free membership to the MusicNet phone service, which features an extensive database of more than 3,000 current albums updated regularly. Recorded messages guide you through the process of selecting your music category; listening to album information; previewing up to three, 30-second sound clips; and placing an order.

At Your Fingertips

MusicNet is shipped in a cardboard folder that is printed with installation instructions, helpful hints, and screen diagrams. This is all the documentation provided, but it covers everything you need to know for this intuitive program.

There are four areas on the CD: Main Menu, Browse, Info, and Order. The Main Menu contains three buttons: Browse, Order, and Quit. Clicking on Browse advances you to the Browse screen from which you can preview selected albums. Albums can be sorted by music style and preview category. The preview categories include the disc's audio only and video/audio selections as well as phone selections available only through the MusicNet phone service. An index lists the albums on the disc alphabetically by name or artist.

The bottom portion of the screen contains a wall of album covers available in your selected category. To preview an album, click on its album-cover icon. The album cover, artist name, album title, previewable song and/or video tracks, and price will be displayed on the upper portion of the screen. By clicking on song titles, you can listen to three, 30-second audio clips. You also can view a 30-second video clip if it's available.

***MusicNet* users can listen to Jimi Hendrix while viewing video clips.**

Descriptive information is available by clicking on the Info button. The information screen contains album and artist profiles, track listings, credits, and discographies. Clicking on the Auto-play button lets you listen to three tracks from the album while you read.

To order an album, click and drag its icon to the "shopping list" in the middle of the Browse screen, or click on the Add To List button. Click on Order List to advance to the Order screen, which lists your albums and lets you specify whether you want a CD or cassette and how many of each you want. Pricing information is also displayed, which includes the $3.95 shipping fee, no matter the order size. Orders can be called in by phone, faxed, or sent by E-mail. Delivery is overnight for orders placed by midnight EST. Weekend orders are delivered on Tuesday.

Music To Your Ears

We were pleased with both The MusicNet CD-ROM and phone service. The only glitch we experienced was during installation when our computer wouldn't read a file. It didn't affect the use of the program, and MusicNet's technical support staff quickly responded to our call with specific information on how to correct the problem.

In addition to phone and CD-ROM service, MNI Interactive is developing a Web site on the Internet for its music service. Music shoppers never had it so good. ●

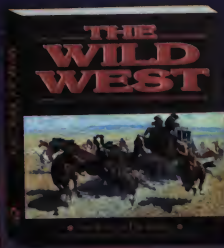
by Diane Walkowiak

For More Information:

The MusicNet CD-ROM Premiere Issue
$8.99 (an issue)
$29.95 (year subscription)
MNI Interactive
(800) MUSICNET
(415) 904-6222

THE WILD WEST

WIN WARNER BOOKS' THE WILD WEST



The 367-page companion to the award-wining mini-series.

SCREEN SHOT

- Educational Games Included
- Narrated by Jack Lemmon
- Over 2,000 Photographs and Videos
- Two CD-ROM set

Adapted from the epic television mini-series, this interactive CD-ROM is packed with thousands of historic photographs, videos, art works, and songs. This fascinating excursion into the past features an easy-to-use interface, video interviews with contemporary western experts,and educational hangman game. This educational CD-ROM is as big and fun as The Wild West.

To enter, fill out The Wild West contest coupon. No purchase is necessary. All entries must be postmarked by August 15, 1996. No cash equivalent or substituted prizes are offered. Employees of this magazine, Warner Books, its privates and affiliates, and Jasmine Multimedia, are not eligible to enter the contest. Void is subject to all local, state and federal regulations and is void in Georgia, Utah, Michigan, Rhode Island,Oklahoma, New Mexico, South Dakota, Virginia and where otherwise prohibited by law.

Complete this form and mail to:
Jasmine Multimedia
6746 Valjean Ave
Van Nuys, CA 91406

Answer the question from the screen shot _____

Name _____

Address _____

Phone _____

JASMINE MULTIMEDIA

To order The Wild West, or for the name of a retailer in your area.

Call (818) 786-5344

Only $69.00 each

The Most Complete Mailing, Marketing and Telephone Information Available on CD-ROM!

American Yellow Pages: Your single source for information on more than 10 million U.S. businesses. Perfect for generating leads, searching for new customers and looking for products and services. The possibilities are endless, just use our incredible 7,000 Yellow Page Headings/SIC Codes to find what you need or search by company name for any area. It's so quick and easy.

American White Pages: Information on more than 70 million consumers. Select by name, length of residence and median home value. An ideal use for marketing to consumers, verifying information or just looking for friends or relatives. The ultimate desktop reference tool for residential information.

"The American Yellow Pages combined with Sharkware Professional can help you outsell, outmanage and out negotiate your competition."

Harvey Mackay, author of best selling book "Swim With The Sharks Without Being Eaten Alive."

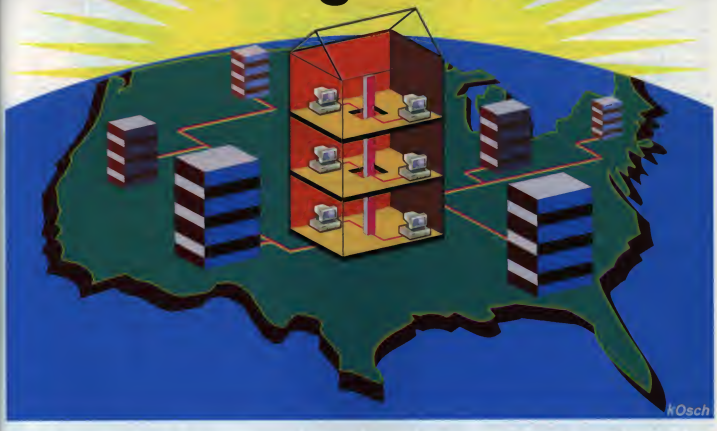
American Business Information®

TO ORDER CALL
1-800-555-5666

Only $69.00 each

5711 South 86th Circle • P.O. Box 27347 • Omaha, NE 68127-0347
Phone (402) 593-4595 • Fax (402) 331-6681 • 1-800-555-5666 • Internet E-Mail Address: cdrom@abii.com

Networking For Novices



How old were you when you learned to share? Hopefully it was before you hit double digits.

PCs pick up on this whole sharing bit a lot faster than people do. In fact, computer sharing, or **networking**, has been around in one form or another just about as long as we've had computers. All it takes is two systems linked together.

We'll examine this compulsion computers have towards connecting, exploring all the aspects that confuse most network users. You may not be able to take what you learn here to devise your own network, but it will help you begin to understand the network jargon at work.

PCs Learn To Share

In the beginning, there were **mainframe** computers. Large central units with huge amounts of memory, storage space, and fast microprocessors were wired to **dumb terminals**, which consisted of keyboards and monitors. Mainframe systems were fairly expensive—you could only find them in top Fortune 1,000 companies. Generally, information systems (IS) departments were in charge of processing the information. If your department needed a report or something processed, it had to go through IS.

When more affordable personal computers were introduced in the late '70s and early '80s, networking became more predominant. Smaller businesses could afford to have computers, and departments in larger companies could purchase PCs to do their own information processing, says Jim Greene, product line manager for *NetWare* products at Novell.

Of course, the first PC networks weren't as high-tech as the ones we have now. Greene says they were called **sneaker nets**. There were all kinds of brands: Converse net, Nike net, Adidas net, etc. But they were controlled by foot power. When one user needed a file, he or she would run down the hall with a diskette, save the file to the diskette, then run back to his or her office. After wearing out several pairs of sneakers, it didn't take long for real networks to physically connect the computers, Greene says.

Laura Knapp, senior systems advisor for IBM, says that initially, networks were used to provide better ways to get people to the information they needed.

Networks let users share files and cut down on paper. For instance, someone in one department would create a spreadsheet to do the month-end reports. Networks allowed the coworker down the hall who wanted the same spreadsheet, or the figures from the year-end report, to access the information without ever leaving their desk.

Networks offered the opportunity to communicate more efficiently with other employees through electronic mail and made it possible for PCs to communicate with users who had a different operating environment, such as a Macintosh or a mainframe computer. Networks let companies manage a group of computers from one source, so offices could install just one copy of *WordPerfect* for the whole company to access or supply just one gateway to other networks for everyone to use. The same applies to sharing peripherals like printers and scanners. Although it may not seem economical for one user to warrant an expensive laser printer for the amount he or she

might use it, it makes more sense for a group of users to share the printer.

Today, networking is migrating to another level of sharing. Companies have grown with offices scattered across the country, making it impossible to walk down the hall to work on a project together. Instead of simply allowing users to share, networks have gone another step by allowing users to collaborate. New software programs, such as *Lotus Notes* and Novell's *PerfectOffice*, let people work together on projects from their desktop systems instead of doing the job in person. For example, Knapp says, one user would be able to make changes on a report from his or her desktop computer while someone in a different office could be working on the same document, seeing the changes being made.

A Local Or Wide Perspective

If you use a network at your workplace, you are probably well aware of the benefits a network can offer. What probably mystifies you is the technology and terminology that comprise the network.

One of the most basic characteristics of a network is if it is a LAN or a WAN. Greene says the two operate in the same way but differ according to geography.

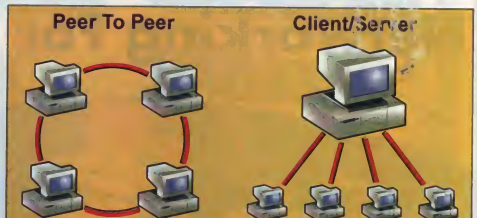
The computer network in your office is most likely a **LAN**, or a **local-area network**. A LAN connects computers and peripherals in a limited area, such as a building or office. (For instance, the computers in the central office building in our main illustration.)

If your office is a branch office that is part of a larger organization, the network that connects all the branch offices and the company headquarters is probably a **WAN**, or **wide-area network**. A WAN operates like a LAN, but it links computers and peripherals over a greater distance, using the telephone system to connect them. (For instance, the network connecting all the other offices and the central office in our main illustration.)

Greene suggests a basic rule of thumb to tell the difference between the two: "On a local-area network, I own all of the lines that connect those computers. On a wide-area network, I lease some of those lines from a telephone company."

A Client Or A Peer?

Various networks treat their components differently. Some networks treat all computers the same. Some networks give more important roles to some computers than others. The thing that determines how the processing and sharing of network duties will be split up is the network's hierarchy.



In a peer-to-peer network, all the computers ordinarily share equal weight. In a client/server network, the server is the most powerful computer. Others connect to the server so they can share its capabilities.

One arrangement is the **client/server**. It's a little like the old class systems in which one computer is the "king" of the computers. This king, known as the **server**, is usually a bigger, faster, and more powerful computer than the rest. It has a lot more storage space and processing power to run the network operating system.

Additional computers, known as **clients**, connect to the server to share its processing power and store files. Really powerful servers can handle hundreds of clients.

The server may be a real monarch, acting as a **dedicated server**. That means the server is strictly a server and will only do the job of the server, Greene says. Some network servers also have a **nondedicated** mode. In this case, the server can do the job of the server and also act as a client so someone can use the system as their workstation.

If your office has many computers connected together—more than a dozen—it most likely uses a client/server network. If your network connects Macintosh computers, mainframe computers, and IBM-compatible computers, it is also likely to be a client/server network. The server works as the interpreter between the clients so they can share files and talk to each other.

On the other side of the hierarchy is the **peer-to-peer** network. This system is more like a democracy than a dictatorship. All the **peers**, or computers, are treated equally; there is no server.

Each computer can store its own files and access the drives and peripherals connected to the other peers. One machine can see the other machine and its files, and the other machine can see the first machine. Occasionally, you may have a more powerful computer in a peer-to-peer network on which other peers may store files. So like life, peer-to-peer networks are not always equal.

An office that connects two to 10 computers probably uses a peer-to-peer network. It isn't as expensive (because you don't need the costly file server), and the connections aren't quite as complicated (so you may not need a network administrator). However, peer-to-peer networks can't connect different types of computers. You can't necessarily have a Macintosh and an IBM-compatible computer connected on a peer-to-peer network because there isn't an interpreter between the two. Additionally, Greene says, you can't peer-to-peer different operating systems, like DOS to OS/2. It has to be OS/2 to OS/2 or Windows to Windows.

A peer-to-peer network also can't grow too large. If you increase the number of peers on your network to more than a dozen, it becomes unmanageable. The reason involves how the peers connect, or the *topology* of the network.

The Lay Of The LAN

The **topology** is the physical configuration of the network. It's how the cable connects the individual computers, or **nodes**, together. There are three basic topologies: bus, ring, and star (see Figure 1).

The **bus** is a commonly used linear topology. All the computers on this type of network tap into a main communications line, or bus. When one workstation wants to talk to another, or to

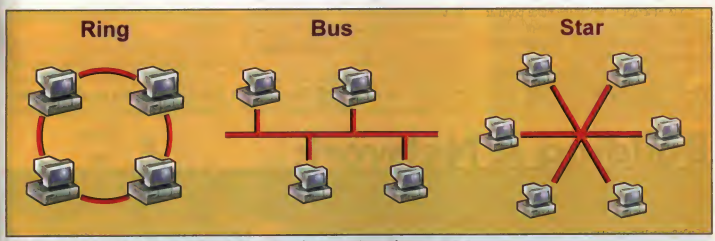


Figure 1: Networks are set up in three different topologies: a ring, a bus, or a star.

the server, it sends out a message, or **broadcast**, that travels down the bus in both directions. Each node reads the message to see if it matches its address. The benefit of this layout is that if one computer on the bus goes down, it won't mess up the rest of the traffic on the bus. Because of all the traffic on the bus, Greene says, these networks (usually peer-to-peer) can't get too big without a lot of problems.

The **ring** topology is formed in a circle. Unlike the bus, which has ends, the ring doesn't have an end. It's made up of short segments that connect one PC to the next and so on, until all the computers are joined in a circle. Signals travel from one PC to the next until it reaches the appropriate node. The system can be set up to bypass a nonworking node. It's also difficult to add more computers to an existing ring.

The **star** is centered around a **hub** computer. Each node is connected to the hub computer, creating a star, or wagon-wheel, configuration. Messages pass from the nodes to the hub, where they are processed or passed along to another node. You need a little more cabling to connect star systems, and when the hub goes down, so does the whole system. Usually this is how most clients are connected to their server.

A network doesn't have to stick with one topology. Although it may use a star to handle the workstations, the hub itself could be on a bus connecting it to other hubs.

"It's like our highway system. You have residential streets that feed into collectors, that feed into freeways, and so on, so it's much more efficient to handle the traffic," Greene says.

Traffic Cops

With all of these computers connected together, sharing resources and data, eventually you're going to have conflicts. More than one computer is going to want to print or use the server at the same time. Conflicts, referred to as **collisions**, indicate that multiple nodes are attempting to transmit simultaneously. The type of protocol indicates how the network will deal with the traffic.

Some systems use a protocol called **CSMA/CD**, or **Carrier Sense Multiple Access/Collision Detect**. It uses the same approach as the old telephone party lines, in which households shared telephone lines. When you wanted to place a call, you would pick up the receiver to listen if someone was already using the line. If it wasn't in use, you could place a call. If someone else was on the line, you had to wait or try again later. CSMA/CD works along the same principles, in which a transmitting computer must monitor if the "line" is being used before it can transmit its own request to the server.

Another common protocol uses tokens. **Token passing** networks can't just broadcast their requests when a line is available. Instead, they have to wait to receive permission. A token is passed along the network, stopping at each node on the network to see if it has any requests or transmissions. The token passes from computer to computer, until it reaches a computer that wants to transmit on the network. From here, the process becomes a little more complicated. Let's say the transmitting computer, which we will call computer 1, wants to communicate with the server, which we'll call computer 4. Computer 1 puts its request on the token. The token travels around the network until it reaches computer 4 and stops there. After being received by computer 4, the token travels back to computer 1. When computer 1 acknowledges that its transmission is complete, the token then can continue its route through the network.

Setting Standards

Now that you know about LANs, stars, rings, tokens, clients, and peers, how do they all fit together? Several standard systems have been established that put together the odds and ends to create networks that work. Of the standards available, three are common: ARCnet, Ethernet, and Token Ring.

ARCnet, which was developed by Datapoint Corp., was a popular system years ago. It used a token-passing protocol to control network traffic. ARCnet networks usually were arranged on linear buses, although the hubs could be arranged as stars.

You won't find many ARCnet systems in corporate America today, Knapp says. Although it may be the lowest costing network system of the three, it is also one of the slowest. It can transfer about 4 to 5 **megabits per second**, or **Mbps**. (One megabit per second, or about one million bits, is used to measure the amount of data being transmitted per second.) Rather, Knapp says, ARCnet prevails in small establishments, such as a dental office or independent drug store.

The next standard, **Ethernet**, was initially applied to a system developed by Xerox but was later rewritten by Digital Equipment Corp., Intel, and Xerox. Ethernet was, and still is, the original CSMA/CD LAN that lets PCs listen for pauses before they "speak." The early Ethernet models used a sort of bus architecture with coaxial (television) cables. A new implementation, called **10Base-T**, lets Ethernet networks form star patterns and use wiring like that in telephone systems.

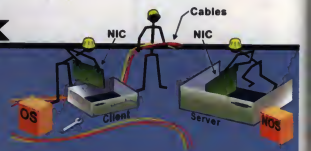
While Ethernet is one of the more popular systems used today, it is the middle-of-the-line in terms of manageability, cost, and speed (running at about 10Mbps).

Today, if most large companies aren't using Ethernet, they're using **Token Ring**. Token Ring is a standard popularized by IBM. It uses the token-passing protocol to give computers access to the network. Although it may seem that Token Ring would use a ring topology, it uses more of a star setup.

Token Ring has a lot more self-management built into the network, Knapp says, so it's higher priced than the other two. It also can run a little faster at speeds of 4 or 16Mbps.

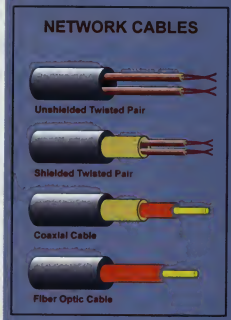
Don't spend too much time worrying about the differences in these standards. They may not be around much longer. Knapp says **Asynchronous Transfer Mode**, or **ATM**, is the next revolution

Building A Network



Network systems involve a lot of extra hardware and software and often that can differ from system to system.

However, all networks do have something in common—a medium to connect them. Ordinarily that requires some type of cable.



The cable of choice for the original LANs was **coaxial cable**, which also is used for cable television, says Jim Greene, product line manager for *NetWare* products at Novell. Made of copper wire covered by insulation, it offered simultaneous transmission of voice, data, and video signals; durability; and relative immunity to electromagnetic interference.

The cable of choice, however, has quickly turned to either ordinary telephone wire or fiber optic cable. Ordinary telephone wire, or **twisted-pair cable**, is made up of two braided, insulated copper wires. It's inexpensive and is already found throughout most offices so it's easy to install. The **unshielded** variety is not immune to electromagnetic interference. **Fiber optic cable** remains the high-speed, high-price means that is immune to electromagnetic interference. Comprised of insulated glass or plastic threads, fiber optics use light pulses to transfer voice, data, and video and is most often reserved for the backbone of WAN networks.

Some people are toying with **wireless networks** that transmit signals through the air, without any cords or cables. Laura Knapp, senior systems advisor for IBM, says small, wireless networks are very attractive whenever there is a problem installing cables, and you need flexibility to make changes to the network. However, the biggest inhibitor to the wireless network is its low speed. Most run in the 1 to 2Mbps range.

The rest of the hardware and software in the network generally depends on the type of network you will be using.

For a client/server network, you'll need:

- A network **server** with a lot of storage space, processing power, and random-access memory (RAM). Servers can have special functions, such as a file server, print server database server, etc.
- A **network interface card**, or **NIC** which is a circuit board that plugs into the **motherboard**, the main circuit board of a computer. The kind of NIC determines if the network will be Ethernet, Token Ring, or ARCnet.
- **Network operating system**, such as Novell's *NetWare* or Banyan's *VINES*, to control the network functions, such as network security, access to network files, and processing requests.
- An **operating system** for the client computer, such as DOS, Windows, OS/2, Windows NT, or UNIX.

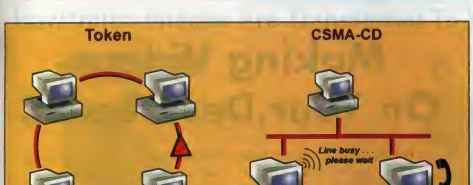
The primary point of a client/server network is its hub, which is your server. Inside the server is a NIC that provides the physical connection to the network. The network operating system installed on the server acts as the operating software that ties everything together. It includes device drivers and protocol information to make everything run smoothly.

Cables connect the server (via a plug in the back of the NIC) into a port on the back of the client computer. The port is a part of the client's own NIC. The client has its own operating software, such as DOS or Windows. The client then has its own **requester code**, assigned by the network operating system, to access the server and its functions. This code lets the machine talk the same language that the server talks, so the client can identify itself to the server.

For a peer-to-peer network, you'll need:

- Another NIC. This circuit board also plugs into the system's motherboard and supplies a port to which you can connect your cable.
- Special operating software with networking features, such as Microsoft Corp.'s *Workgroups for Windows* or *Personal NetWare* by Novell. The type of software indicates what kind of sharing functions you have.

Cables directly connect the peers via ports in the back of each network interface card. Here the individual operating systems do all the work. They have to set all the rules allowing the two to communicate. While it's more complicated software than you will find on your average PC, it's not as complicated as the network operating system because the peers are similar systems (OS/2 and OS/2 or Macintosh and Macintosh). ●



Token-passing networks must wait until they are passed a token before they can transmit requests. CSMA/CD networks, on the other hand, wait their turn until other systems are finished transmitting, somewhat like a party telephone line.

for LANs and WANs. In larger establishments, companies that are currently using Ethernet and Token Ring are going to migrate to ATM technology to connect their desktop computers.

Why the sudden switch? Mainly for the higher speed and higher performance. ATM can run at 25, 100, and 155Mbps and is scalable up to a gigabit. That's quite a jump if you consider the transfer rates of the other standards. At that speed, ATM can transfer voice, data, and video services in no time.

"ATM today is where all LAN technologies were in the '80s," Knapp says. "In five years, you probably will see most networks with asynchronous transfer mode as their predominant desktop environment."

What's To Come?

Lots of changes are coming to networks, and asynchronous transfer mode is just one of them. In fact, valuable innovations are due in the very near future.

Knapp predicts desktop videoconferencing will be one worthwhile innovation. Currently, network users collaborate by speaking over a telephone, sending E-mail messages, or transferring data files.

"When you look at desktop communications, we do so much just with word. But that's less than 7% of getting a point across. You've got the intonation of the voice, and you've got the actual body language. And we've totally missed that with all the communications we have available to us today," she says.

Someday desktop videoconferencing will let us combine voice, video, and data to communicate our ideas. For instance, instead of just telling a co-worker about a new concept, you could show them diagrams to better illustrate your ideas.

Networking also will be a lot easier, Greene says. Networking should get to the stage where we don't need to rely on a "computer jock" to set things up and fix things when they go wrong.

"When you walk into a room and flip a lightswitch, you don't stop and say to yourself, 'Boy, I hope when I flip this, it comes on,' or you don't look at a checklist of things you need to do," Greene says.

Networks also need to become this simple if they are going to become more prevalent on a global perspective, as Greene predicts. He foresees more global networks like the Internet. These networks, however, will be secure so we can do our banking from our computer. AT&T and Novell are working on a project that will build a global network in which companies can buy time like they do with a phone company. Maybe then people could hook up via computers, just as they do with the telephone, and communicate using the computers to send information and data across.

Networks won't just include computers, Greene says. Just about everything that we use today has a computer chip in it: telephones, faxes, cars, photocopiers, and many home appliances. Soon all of these devices will be connected through wireless connections or other means. That means one day we may be able to send a report directly to a photocopy machine from our computer to be collated and stapled, or maybe the lights and the coffeemaker could come on the minute we log in at the front entrance in the morning.

"The future of networks is absolutely going to include more connectivity, connecting more than just computers," Greene says. "It will connect everybody to everything so that I can do what I need to do anytime, anywhere." ●

by Cindy Krusheniskv

Network Lingo

Hub—The location on a network where circuits are connected. In a LAN, the hub is the core of a star topology.

IPX/SPX—A primary protocol for networks that automates the process of letting the machines talk to each other and configure themselves to work together. When compared to TCP/IP, this protocol creates more transmitting traffic.

ISDN—Integrated Services Digital Network. A new international telecommunications standard that would transmit voice, video, and data via digital phone lines.

Nodes—Any device connected to the computer network, including computers, servers, and peripherals.

OSI—Open Systems Interconnect. A detailed model set up to define how two diverse computers can communicate. The seven layers include physical, data link, network, transport, session, presentation, and application.

Packet—The basic means of transmission on a network. Files and messages are broken down into packets to be sent.

Router—A system that stores/sends data between LANs and WANs.

TCP/IP—A protocol for networks that creates tables to store addresses for each system on the network so they can all communicate. When compared to IPX/SPX, this protocol doesn't create much traffic but is more administrative intensive. ●

Making Videos On Your Desktop PC

Multimedia is still more a buzzword in the industry than anything else with true multimedia capability—data, voice, image, video, and sound—still evolving, particularly in the PC desktop market. In fact, today's multimedia usage tends to be passive rather than active or creative. But that's slowly changing as end-user computer savvy and sophistication increases and vendors introduce multimedia products that are inexpensive and easy to use.

For users eager to move beyond still-image capture, there's a growing number of hardware and software vendors offering products that let you capture moving images on your computer. That means your PC, with the right equipment, can capture motion video clips from a video source such as a VCR, camcorder, laser disc, or a prepackaged collection of video clips on CD-ROM.

The technology to capture full-motion video at the desktop has existed for the last half decade or so. In its infancy, however, multimedia for the masses was still hype, and these types of solutions were expensive and primarily purchased by professionals.

The times are changing, though, with more than 30 vendors offering full-motion video boards, some with price tags in the $200 to $300 range, according to Meg Whitbread, senior research analyst at Frost & Sullivan Inc., a market research company based in Mountain View, Calif.

"In the last few years, the market for motion video has shaped up quite a bit and now caters to both low-end as well as high-end users, costs have come down, and products target different levels of user sophistication," she says.

That said, don't think exploring the frontiers of motion video on your PC is an inexpensive walk in the park. Purchasing a full-motion video capture board is just the beginning of what might turn out to be a $1,500+ shopping spree that includes additional purchases to ensure your desktop PC has the required capacity to handle motion video files.

Motion video in today's home PC market is in its infancy. The ambitious computer enthusiast with more than spare pocket change, however, can certainly have a good time exploring this media type and forge a path that, in the not-too-distant future, many more home users are bound to follow.

The Basics

To do motion video on the desktop PC requires an understanding of the basic underlying technology of the process and the challenges of doing desktop video. While you might be a novice going into this endeavor, any user serious about desktop video won't stay a novice for long. Some basic understanding about desktop video is recommended before you even take out your wallet, as a little education will make you a more informed consumer.

Consumer and business interest in motion video is on the rise as video becomes more integral to the media mix. The reason is because the elements of video (i.e., color, sound, and movement) engage viewers differently than other media types, as easily exemplified in the couch-potato syndrome.

The products that incorporate the technology for transforming an analog video signal into digital information—the kind your desktop PC can accept and store in an electronic file—are called **full-motion digitizers**, or **video boards**. Video boards are printed circuit boards that are installed into an open slot in the PC. They provide different functionality than graphics cards and *do not replace the graphics card*.

Video capture boards get an analog video signal into the computer while video output hardware and/or software converts the digital signal back to analog for viewing on a TV.

In order to do full-motion video on the PC, a number of technological elements had to fall into place. Most importantly, the PC had to be powerful enough to handle the processing requirements of video. As with graphics-intensive applications, video places an enormous demand on PCs for larger file sizes and more processing power. The slower a **microprocessor** (the "brain" of your computer), the more ineffectual it will be for video-image transfer.

Additionally, vendors had to devise ways to reduce video file sizes, or **data rates**, to make them fit on a reasonably sized hard disk. If you do the math for video, you'll quickly see how one minute of video can overwhelm a hard disk. For example, video captured at **VGA (video graphics array)** resolution (640 x 480) multiplied by the number of colors in 24-bit color multiplied by the number of frames per second (fps), ideally 30fps, equals **gigabytes** per second of uncompressed video. (VGA is the standard established by IBM for PC monitors; in technical terms, VGA is a video adapter, which is the circuitry that controls your screen display. A VGA system can display up to 640 x 480 **pixels**, the little dots that form on-screen images, with a maximum of 16 colors. Gigabytes are equal to approximately one billion bytes.)

Board manufacturers have devised methods for reducing the data rate with varying impact on the quality of the video as seen by the eye.

How Video Images Are Transferred To Your PC For Editing

START

1 Video of Billy's birthday party is shot on family camcorder.

CAMCORDER

2a

2 Camcorder is plugged into Intel's Smart Video Recorder Pro board installed in PC. Connection is made from the RCA (Composite) or S-video jack labeled "AV out" or "Video out" on camcorder to corresponding plug on back of computer.

3 Using *Digital Video Producer* (DVP) software, name the video file to which your video will be transferred. Dialog boxes will help you allocate enough file space for the video file.

4 Choose a size for the video window, a video data rate, and a compression method. Intel Indeo™ R3.2 Video will compress your file while the image is captured. Intel Indeo™ RAW Video requires more hard drive space but will provide the best possible image quality.

5 Choose your video source. Select Composite if you're using an RCA cable, S-Video if you're using S-Video cable.

6 Set capture settings by selecting a frame rate (the number of frames captured per second) and your audio rate.

7 Capture video using DVP capture.

8 Using DVP, or other video editing software, add audio effects, transitions, titles, overlaid videos, and morphing.

9 If the video is to remain on the PC, you're done. If you want to output your masterpiece to video tape, you need to run it through a scan converter. This is because a PC's VGA monitor has a higher resolution than a TV/VCR, so the PC's display must be converted to a TV signal to be recorded to tape.

SCAN CONVERTER

10 Connect scan converter to PC through output plugs on VGA adapter and monitor. Connect to TV or VCR through input plug. (This connection also lets you play computer games on your TV.)

TV

VCR

11 To record, use DVP's Print to Screen feature to play video file. At the same time, start the VCR's record function.

12 When recording is complete, mail video tape to grandparents. You may want to delete file to free up valuable hard disk space.

For example, the data rate can be reduced in four ways:

- reducing the **frame rate**, the speed at which video images are displayed
- reducing the number of colors
- using **compression techniques**, the translation of data (video, audio, digital, or a combination) to a more compact form
- reducing the size of the video image on-screen (the smaller the image size, the lower the data rate)

In your pursuit of desktop video, you'll inevitably hear about numerous standards that accomplish some of these technological feats, such as Indeo, Captain Crunch, MPEG, Motion JPEG, Cinepak, etc. At this point in time, there are many standards related to video and no clear winners. Eventually you may want to know more about them, but for now, you don't have to be concerned with standards when you shop for a low-end product that will have all the functionality to get you started (see the sidebar entitled "Compression Standards").

Rev Your Engines

Desktop video first needs to be put into context. To understand what you can expect of the technology, you must have an idea of what you wish to accomplish, how much you want to spend, and who is in your audience.

There are success stories to be told about desktop video, but they come primarily from the corporate ranks, where there are dollars to be spent and projects that differ from those a home user might explore. Desktop video is still new enough, however, that when put into the hands of the consumer market, the possibilities for what can be done with it are vast and, as of yet, undocumented.

For example, you might want to run home video on your computer so you can pull out clips to incorporate into a personal family multimedia title as a keepsake or to send to friends and family. Multimedia titles also can be created for education or creative purposes. Editing your home video will eliminate the wobblies and those floor and ceiling shots. If you run a home or small business, video will let you create multimedia presentations for clients, advertising for a local cable station, or video clips to be incorporated in your applications.

Whatever the objective, there are several basic requirements for getting started. Once you understand the basics, ambition and creativity can lead you into more sophisticated projects and technology. For now, we'll focus on the needs of the beginning desktop video user with an IBM or IBM clone.

First, you'll need a Windows 3.1-equipped multimedia desktop platform. Then you'll have to make sure you have the necessary hardware, software, and peripherals.

Reading and window shopping are strongly recommended before purchasing hardware and software video products.

Operating System

To run video on a PC, you'll need to have *Video for Windows*. Video for Windows is Microsoft's architecture that supports video and compressed audio in Windows. In reality, it's something that you don't see and have nothing to do with.

The architecture is a set of files that lets Video for Windows run on the PC. These files are freely distributed. Kevin Larkin, program manager for Video for Windows, says that Microsoft wanted it to be a part of Windows, but the development work wasn't in sync with the release of Windows 3.1. Video for Windows is currently a part of Windows 95 and Windows NT.

End-users usually obtain Video for Windows through a vendor's multimedia product (usually an application that uses .AVI files) and is distributed as part of the application's installation. If you don't have the files, also called **runtime files**, you can access them via an online service like CompuServe or Microsoft's Product Support Service bulletin board system.

Basic system configuration requirements for desktop video are outlined by product vendors. These products usually have required (minimum) system specifications and recommended system requirements. It's usually best to use the **recommended** system requirements because they give users more room to move and generally provide better performance. This is another reason why reading and window shopping are strongly recommended before purchasing hardware and software video products.

Based on the advice of several industry experts, consider the information in the following sections to get started in desktop video.

Hardware Requirements

Motherboard. Industry experts suggest using a 66 **megahertz** (MHz) 486DX2 microprocessor, but a 60MHz or 90MHz Pentium is preferable. If you're purchasing a new system and know then that video is on your agenda, for a price differential of a few hundred dollars, go for the 90MHz Pentium processor. (Megahertz, which is equal to one million cycles, represents the frequency at which electrical currents cycle through your computer.)

Cache. Cache is a buffer area where data goes before it's processed, or after it's processed but before it goes to a peripheral. You want as much cache as possible, ideally 256 **kilobytes** (KB) or more. Where video files and their processing requirements tax the system, extra cache will help to offload the video processing and speed it up as well. (A kilobyte is equal to 1,024 bytes.)

Memory. Desktop video users shouldn't use anything less than eight **megabytes** (MB) of **random-access memory** (RAM). While you might get away with 4MB of RAM for a one- or two-minute video clip, a five-minute clip requires 8MB of RAM; add three-dimensional animation and graphics, and you'll need 16MB. Without a 90MHz Pentium and 32MB of RAM, you'd be fooling yourself trying to do a 15- to 30-minute video clip. More memory and a faster processor means smoother video. (A megabyte is equal to approximately one million bytes. Random-access memory is the temporary storage area used to load program instructions and store files currently in use.)

RAM can be expensive, generally about $50 to $60 per megabyte. While you're shopping, be aware that RAM chips come in different speeds: 60/70 nanoseconds or 80/90 nanoseconds. Buy the faster chip because the speed measures how fast data is processed. Check with your RAM source to make sure the RAM chips you buy will run at their rated speed on your system. Added RAM chips only run as fast as the slowest chip on the board, so find out what speed chips you have on your PC.

Storage. Compressed video files, on average, consume between five and 10MB per minute, depending on such variables as image size and compression technique. Are you going to be a small, medium, or large user? Adequate storage capacity is 500MB. Hard drives come in different speeds; you'll want a drive with a speed of 10 milliseconds or less. Slow drives will result in slow data access that will be visible on the video.

Adam A.P. Andrew, owner of Intuitive Imaging, a digital videography studio in Flower Mound, Texas, and 30-year veteran in the computer industry, recommends using compression software, especially if your hard drive has less than 500MB. Compression software, in essence, gives you twice the storage capacity or more.

One of most popular products on the market is *Stacker* 4.0 from San Diego, Calif.-based Stac Storage & Communications. The product retails for less than $100 and provides an average of 2.5 times the original storage capacity of your hard drive.

In contrast, the Santa Clara, Calif.-based Intel Corp., maker of the Intel Smart Video Recorder Pro, recommends not using disk compression programs like Stacker or Microsoft's Doublespace because compressed drives are slower and affect video performance.

If you can afford a large hard disk drive (500MB or more), avoid using compression software. If not, invest in compression software, but expect some performance degradation.

Monitor. Bigger is indeed better. A monitor with a low **scan rate**, the rate at which on-screen images are drawn, is also desirable. The ability to do color adjustments (i.e., registration, definition, and balance) is a nice feature as well.

Sound Card. For moving video images, good quality sound is crucial. Cheap sound cards may be easy on your wallet, but they can degrade the overall quality of your video. You'll want a sound card with **digital wavetable synthesis** and 16-bit quality stereo recording. Wavetable synthesis technology produces rich, realistic sound because it samples real instruments versus synthetic FM sound. A 16-bit-quality stereo handles more data input than 8-bit technology, results in improved sound quality, and provides more bandwidth for better sound recording. (For more information, see "Elements of Audio" in the March 1995 *PC Novice*.)

■ Video Capture

Doing video on your computer means capturing video as well as viewing it. *Getting* video into a PC requires a video *capture* card, *playback* on the PC requires a video *playback* board. Half of all cards on the market do both capture and playback, according to Whitbread. Don't buy a video capture card that's been on the market for more than six or eight months. The technology is changing fast, and you want the latest technology.

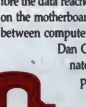
A few products to note are Video-It! from ATI Technologies Inc. in Thornhill, Ontario, and Intel's Smart Video Recorder Pro. Both products are bundled hardware/software solutions: ATI bundles *Action!* from Macromedia, a multimedia presentation package, and includes its own *Mediamerge* editing software. Intel includes *Digital Video Producer* editing software from Asymetrix and *DigiClips* from TriDigital

The ATI and Intel products capture and compress video simultaneously under Windows before the data reaches the **bus** (the copper tracings on the motherboard's surface that transmit data between computer components). According to Dan Coyle, media relations coordinator at ATI, the real-time compression process saves time and disk space, allowing longer and higher **resolution** video segments to be captured. Another technique used is two-step capture, which first stores the captured video and then compresses it. (Resolution is the sharpness of on-screen text and graphics.)

Intel's Smart Video Recorder Pro uses Indeo video implemented in hardware. Full-motion video records to disk at the following rates: 160 x 120 at 30fps; 240 x 180 at 24fps; and 320 x 240 at 15fps. To understand the image size at these resolutions, 320 x 240 is about one-quarter of a screen. Lower resolution images are smaller yet. Few, if any, vendor products capture video full-screen, but you can play back video in full-screen.

Steve Alten, product marketing manager for Smart Video Recorder Pro, says that the Intel board reduces the video stream five times in real-time. "Not only does it lower the data rate, but the process tends not to lose video information when recording it to hard disk, unlike other technologies," he says.

Video Blaster RT300 from Creative Labs Inc., based in Milpitas, Calif., uses the same compression technique as ATI and Intel. The product comes bundled with Adobe's *Premiere*



ompression Standards

Video on the desktop is only possible when it is compressed. **Codec** (*com*pression-*dec*ompression) **algorithms** reduce the data rate of video and should *not* be confused with disk compression techniques like *Stacker*. There are several codec algorithms for video compression, some of which are done in software, some hardware. Without getting too technical, know that some codec algorithms are better for capture, playback, or both.

Some of the more popular techniques include:

Motion JPEG—Joint Photographic Expert Group. Originally developed for still-image compression, JPEG was adapted to video in the technique called Motion JPEG. Motion JPEG is an accelerated version of JPEG and uses intra-picture coding to let users easily access and reconstruct each frame of video.

MPEG—Motion Picture Expert Group. Similar to JPEG, MPEG uses sophisticated inter-picture and intra-picture coding, making it difficult for editors to access individual frames of video randomly. MPEG is considered a distribution algorithm, suitable for encoding an application for final distribution. MPEG is typically three times better than Motion JPEG and produces VCR-quality video. MPEGII yields broadcast-quality video.

Indeo. Intel's codec algorithm was developed for **scalable software playback video**, which means the software automatically gives you the correct number of colors for your system's video resolution and the frame rate you're proposing. In other words, if you have a slower system, the playback is slower; if you have a faster system, the playback is faster. Indeo also features hardware-assist for real-time video capture capability, meaning Indeo does compression in hardware, versus software, in real-time. The hardware accelerates the ability to compress.

Cinepak. This is SuperMac's codec algorithm for scalable software playback video. There is no real-time capture capability because there are no board products for Cinepak. ●

for Windows, a video editing and special effects tool, and *Compel PE*, a presentation package from Asymetrix, according to Aaron Feigin, Creative's product marketing manager.

In addition to capturing video from a video source, video cards also provide input, manipulation, digital editing, and effects. Get a hands-on demo of the product, if possible, to check the user interface and ease of use. Make sure the video card supports the bus architecture of your PC.

Video Playback

Unless you want to watch your finished video in a postage stamp size, you need a video playback board that lets you enlarge and enhance the image by offloading processing from the microprocessor. There are several such boards on the market. Rather than buying a separate video playback board, investigate graphics accelerator cards that also play back motion video. (For more information, see "Full Speed Ahead With Video Accelerator Cards," in the April 1995 *PC Novice*.)

ATI sells three such cards: Graphics Xpression, WinTurbo, and Graphics Pro Turbo. The least expensive is Graphics Xpression ($249), a 2MB DRAM board for 64-bit color with a built-in motion video accelerator. Again, match the card to the bus on your PC. (**DRAM**, or **dynamic random-access memory**, is a form of video card memory.)

That's just the tip of the iceberg. You can distribute a video file on a floppy diskette, but if you want to view your video on TV or record it to tape, you'll need a VGA-to-NTSC (the standard for your TV format) converter; a low-end converter can be found for a few hundred dollars. You *may* be able to find VGA-to-NTSC capability on a card. Coyle says that while the company doesn't currently have this capability in its board products, ATI is looking into adding it in the near future.

Software

Computer video requires video editing software and sound editing software. **Video editing software** lets you manipulate, edit, cross-edit, cut and paste, and control motion (i.e., rotate, zoom, etc.). **Audio editing software** turns your PC into a PC-based recording studio that can record, cut and paste, adjust, equalize, and mix.

Multimedia authoring software integrates different data types and merges files from different programs. This software yields a finished product that features **interactivity**, meaning that the viewer can interact with the program. A **presentation program** is not interactive and is meant to be viewed only for its informational content. Whitbread says that there are a wide range of multimedia authoring products, with many new vendors entering the market. Low-end packages cost less than $1,000. Presentation software is less expensive, in the $100 range.

When shopping for multimedia software, watch out for semantics in the marketplace.

According to Whitbread, an effective multimedia authoring system includes:

- a logical and easy-to-use interface
- the ability to import a variety of media file formats
- the ability to provide high-quality appearance and playback, especially for the kinds of transitions commonly used in multimedia presentations, such as dissolves, wipes, and zooms
- event synchronization and interactivity

When shopping for multimedia software, watch out for semantics in the marketplace. In some cases, the definitions of multimedia authoring software and presentation software are blurring because some presentation software vendors add multimedia authoring features. Additionally, presentation software vendors are gaining a foothold in the multimedia marketplace by bundling their software with video hardware. What you won't find in presentation packages are scripting languages, the ability to add button interactivity, and the ability to support sound and video playback through programming.

Remember, there are distinctions between the product types, so shop carefully to ensure that you buy what you need. Before looking for a package, know what you want to do and what your software editing requirements are.

When you're ready to have more fun with computer video, consider investing in 3-D **digital morphing software**, which lets the user change the form or development of an image in a deliberate manner, or 3-D and animation products. Such products can be found for less than $200. (An example of morphing can be seen in Michael Jackson's "Black or White" video from a couple of years ago.)

Roll 'em

Computer video can be fun and entertaining. But don't expect to be making movies overnight. Not only will the shopping process take time, but delving into the technology and products and learning how it all works together also requires dedication.

Now take a deep breath and give yourself a couple of months to digest, test, and embark upon video production. Then get out the popcorn. ●

by Lynn Haber

For More Information:

Action!
Macromedia Inc.
(800) 288-8108

Digital Video Producer
Compel PE
Asymetrix Corp.
(800) 448-6543

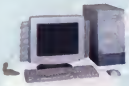
Premiere Version 4.0 for Windows
Adobe Systems Inc.
(800) 833-6687

Smart Video Recorder Pro
Intel Corp.
(800) 538-3373

Video Blaster RT300
Creative Labs Inc.
(800) 998-5227

Video-It
Graphics Xpression
WinTurbo
Graphics Pro Turbo
Mediamerge
ATI Technologies Inc.
(905) 882-2600

Two Situations. Two Solutions. One Store.



Packard Bell Force 468T
Multimedia PC with Intel® Pentium® 75MHz processor. Features 16MB RAM, 1.275 Gig hard drive and Quad-speed CD-ROM drive. #12-10534
Monitor sold separately

Canon BJ-C 600e Inkjet Printer
Color Inkjet with 720x360 dpi and smoothing in B&W. Also has 360x360 dpi in color, 100-sheet paper tray and 20 TrueType® fonts. #97-10391

Microsoft Office
Everything you need for the office from Microsoft. Includes Microsoft Word, Excel, PowerPoint, Mail and Access. #69-10501

Apple® Macintosh® Performa® 630 CD
All-in-one family multimedia computer with 250MB hard drive, 8 MB RAM, Motorola 68LC040 66/33MHz processor, fax/modem, CD-ROM drive, and a 14" high-resolution color CRT (13.2" viewable screen size). #12-10496

Apple® Color StyleWriter® 2400
Crisp, color printing at 360 dpi. Prints 3 pages per minute in B&W. Also has brilliant color outputs and 64 scalable Apple® TrueType® and Postscript™ fonts. #97-10559

Myst for Mac™
Unlock mysteries in this intriguing exploration of another world. An exciting, surrealistic, stunning 3-D CD-ROM adventure. #60-12141

You know the scenario... an invigorating day at the office creating awesome-looking presentations, calculating sales projections and producing great results on your PC! And, you know the feeling... arriving home, slipping into your favorite duds and settling down in front of your Mac® for a night full of fun and entertaining computer gaming! Computer City Supercenters are filled with the perfect combination of computers, laptops, monitors, printers, accessories, and software to satisfy both situations... whether you are experiencing a business crunch at 10 a.m. or an adrenaline rush at 10 p.m. Check out our extensive collection of Mac® and PC hardware and accessories, plus an overwhelming selection of both productivity and entertainment software. At Computer City, you are sure to find all of the computer related products you need... when you need them!

COMPUTER City® SUPERCENTER

CALL 1-800-THE-CITY FOR THE STORE NEAREST YOU!

YOU CAN'T MAKE A WRONG DECISION WHEN YOU GO TO THE RIGHT STORE!℠

Sports In Cyberspace

The trading deadline is fast approaching, and you've stewed over your options long enough. Your team has a shot at winning the league championship, but you need one more key player. You have some enticing young prospects available as trade bait to obtain a veteran who can carry your team to the title.

You need to contact fellow owners in the league to determine if they're willing to part with a star player. Then you should obtain the season statistics to make certain you're getting a player who can contribute solid numbers. It wouldn't hurt to check with some media types—such as an ESPN analyst like Peter Gammons or Dick Vitale—to test the rumor mill and see who would be the best addition for your team and whom you should avoid...

You crash back to reality when your spouse asks you to take out the garbage for the *third* time.

OK, so you only own a fantasy sports league team. But just because you don't have a break-the-bank payroll like George Steinbrenner or Jerry Jones doesn't mean you don't want to win. Where can you find all of the information you need? In the virtual expanse of cyberspace, of course.

The three major online services—America Online (AOL), CompuServe, and Prodigy—give you access to the latest sports news and instant scores. You can participate in sports discussions with other fans in real-time (called **chat rooms**) or through **bulletin board systems** (BBSes), where you leave messages that others respond to at their convenience. You even can own a sports team, at a fraction of Steinbrenner's payroll, through online fantasy leagues. (An **online service** is a commercial information service that you subscribe to through your computer. You connect to the service through your **modem**, which is a hardware device that allows two modem-equipped computers to exchange data over telephone lines.)

Fans Online

The online services make it simple for you to find sports news or join the discussions. Fans we talked with have a variety of reasons for going online to get their sports fix.

Mike Anderson of Effingham, Ill., says the instant access to motor sports information is his favorite CompuServe feature. Anderson, who has been a CompuServe member for about one year, says he now gets the majority of his motor racing information online.

"I'll never forget learning of Ernie Irvan's accident through CompuServe just minutes after it happened," Anderson says. "The wealth of information from experts who are active or retired from the sport is phenomenal... It's like going to a race and having all 80,000 fans and participants as your close, personal friends."

AOL and the Internet allow Jill Spetoskey of Grand Rapids, Mich., to track her favorite sports.

"What I make the most use of is the opportunity to follow sports that aren't necessarily covered locally by traditional media, (such as) my attempts to follow college swimming and diving," Spetoskey says. "If it weren't for the Internet, I'd have no news at all." Fans who don't live near their favorite teams use the services to keep in touch. Tony Rudy is a fan of the University of Massachusetts college basketball team, but he lives in Arlington, Va. AOL and the Internet keep him connected to news about the Minutemen.

"Because (my) local papers don't carry much in-depth information on the team, going online is the best way to get it," Rudy says. "When something appears in the *Boston Herald*, for instance, and it is interesting enough, people post the story and talk about it... If it wasn't for college basketball, I probably wouldn't go online as much as I do."

Lenny Pacala, an AOL user and teacher from Milwaukee, enjoys the online sports discussions and says they are far superior to radio sports talk shows—despite the occasional flaming (rude comments).

"Written comments allow for better thought and preparation," Pacala says. "A lot of what I see on the bulletin boards is very clever. I recently saw a comment concerning a particular opinion

ABC Sports gives America Online users the thrill of victory and the agony of defeat.

of the baseball players on the bulletin board. I recognized it immediately as the work of a young person. I E-mailed and warned the youngster to take it with a grain of salt if other individuals vehemently disagreed. Comments can be harsh."

Fantasy Leagues

What is a fantasy league? It's similar to owning a real team, minus the headaches of strikes and holdouts. You select a group of players from the actual professional league, usually through a league-wide draft, and your team's performance is based on the actual statistics accumulated by those players. You can drop and add players as well as trade with other teams.

For the online service-sponsored fantasy leagues, the service tracks all statistics and standings. You'll usually pay an entry fee, and the winners sometimes receive free online hours.

Fantasy leagues online don't always involve the online service directly, though. People looking to join individual leagues often can find other players through the BBSes. In such leagues, one member of the league tracks the statistics and standings. One disadvantage to these leagues is the possibility that—because they lack the backing of the online service—they'll disband midseason.

"(Such) leagues on Prodigy are for the most part free; therefore, it's very hard to find ones that last," says Edgar Binoya of Cerritos, Calif. "I can only point out three or four leagues that I have participated in (during the past three years) that have finished a season."

NOTE: Be sure you're clear on all rules and costs before agreeing to play in either type of league. Entry fees offset statistics-gathering costs; they do not include hourly usage charges you acquire while going online to download stats or work out a trade.

The post office can't mangle your virtual copy of *Sports Illustrated* on CompuServe.

Ten Can't-Miss Online Sports Prospects

Apart from the usual offering of major sports news, facts, and figures, what can sports fans find online? Here are 10 online sports areas you won't want to miss. Some contain valuable information, some deal with a particular sports niche, and some are just plain fun. Start at the main menus for the various services when following our directions.

1. 1996 Olympics: On Prodigy, you can access the *Atlanta Journal-Constitution* newspaper (for an extra charge) to get the latest Olympics news and ticket information.

Finding it: Select the Jump To command from the Jump menu. Type **access atlanta** and hit ENTER.

2. BBSes/Chat Rooms: All three services have numerous bulletin boards and chat rooms devoted to giving sports opinions. If your feelings are easily hurt, be careful; passions over teams and players sometimes spill over into flaming.

Finding it: These offerings are sprinkled throughout the services. If you access the main sports areas on each service, you'll find numerous BBSes and chat rooms.

3. Golf: On CompuServe, you can plan a golfing vacation. Details on public and private golf courses (including some descriptions) are listed.

Finding it: Click on the Find button. Type **golf** and hit ENTER. Double-click on the Lanier Golf Database listing. In the Travel Services window, double-click on the Lanier Golf Database listing again.

4. Horse Racing: On AOL, you can go trackside for the latest information. Track details and Triple Crown news are among the offerings.

Finding it: Click on the Sports button, then on the ABC Sports button and the Winner's Circle button.

5. Motor Sports: On CompuServe, you can read and discuss the latest racing news from NASCAR to Indy cars to off-road.

Finding it: Click on the Find button, type **motor sports** in the window and hit ENTER. Then double-click on the Motor Sports Forum entry.

6. Opinion Polls: On Prodigy, you can give your opinion on various sports topics.

Finding it: Click on the Sports-ESPNet button, followed by the Polls button.

7. Outdoor Sports: On AOL, you can investigate or set up an outdoor sports vacation, ranging from fishing to horseback riding to kayaking to hiking.

Finding it: Click on the Sports button, then on the Magazines, Clubs, and Info button. Double-click on the Outdoor Adventure Online entry.

8. Sports Illustrated Archives: On CompuServe, you can search through more than 15,000 past articles, with a $1.50 charge for each article you read.

Finding it: Click on the Go button. Type **sports** and hit ENTER. Click on the SI Magazine button, then on the SI Archives button.

9. Tickets: On AOL, you can order tickets for sporting events in Chicago and Florida or for Washington Capitals home hockey games.

Finding it: Select the Keyword command from the Go To menu. Type **ticketmaster** for games in Chicago or Florida; type **caps** for Capitals' games. Then follow the on-screen menus.

10. Traveling: On Prodigy, use the Mobil Travel Guide to find sports information and recreational opportunities in American and Canadian cities.

Finding it: Select the Jump To command from the Jump menu. Type **mobil travel** and hit ENTER. After selecting a city and state, click on the City Reference button, then on the Sports and Recreation button. ●

Why Play?

To many nonplayers, the fantasy game sounds, well, boring. How can a number-crunching, statistics-based game be better than the real sport? For many of the players we spoke with, though, the thrill of pulling a successful trade or finding the little-known rookie quickly turns skeptics into fanatics. For some, the fantasy league is more exciting than the real thing.

"The first thing I did when I heard the (baseball) strike was over (in April) was sit down and start playing with the stats," says Dan McIlroy, a Prodigy user from Sun Prairie, Wis. "The only reason I'm happy they came back was so we can play."

McIlroy didn't think fantasy baseball sounded too exciting when he initially joined Prodigy five years ago. But after his wife paid his entry fee for Baseball Manager (Prodigy's online game) three years ago as a birthday present, he quickly became hooked. He's now in a league with a core of six players from year to year. The league members have never met in person, McIlroy says, but they hope to meet at an All-Star Game sometime.

Bob Kessler of Vienna, Va., says he typically spends one to two hours a day playing Baseball Manager. The game gives daily results and requires daily access for lineup changes, which Kessler says makes it one of the most realistic fantasy games.

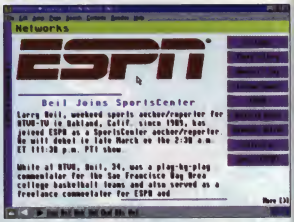
"It's a pastime for most people," Kessler says. "It really gets your mind working. You have to try to out-fox the other nine guys in your league."

Last season, he served as a volunteer support person, answering general user questions about the game. At times last season, he managed up to 12 teams, taking over some teams whose owners had quit. That isn't even the unofficial record; Kessler says one person ran 15 to 20 teams last season.

McIlroy says one team is plenty for him.

"As much as I'd love to have two teams, I wouldn't have enough time to keep track of everything," says McIlroy, who runs his own business. "I bite into an hour worth of my workday as it is trying to play with this stuff. I don't think I can afford to give up two hours."

George Walden of Shawnee, Kan., finds fantasy leagues a nice diversion from day-to-day activities.



Da-da-da. Da-da-da. ESPN junkies will find a home away from their TVs on Prodigy.

"For 30 minutes to an hour a night, I can sit in front of my computer, and forget about what's going on out in the real world," says Walden, who has been on Prodigy for about two years. "I can get wrapped up in this and play it out as if it were a job, like a second life or something. That side is pretty cool." ●

by Kyle Schurman

Online Sports Features

All three online services have similar basic sports offerings. You can read news stories, view standings, or download statistics. We'll tell you how to access the main features.

America Online

From the main menu, click on the Sports button. You can select a specific sport from the list. Clicking on the ABC Sports icon gives you access to the network's sports information as well as video and sound clips. The Grandstand is the main sports area, containing BBSes and chat rooms for all of the major sports. AOL sponsors 11 fantasy/simulation leagues through the Grandstand.

Best feature: Fantasy league variety (including a pro wrestling simulation)

Worst: Finding individual team news is difficult

Cost: $9.95 per month for five hours of connect time; additional hours are $2.95

Phone: (800) 827-6364; (703) 448-8700

Prodigy

At the main menu, click on the Sports-ESPNet button. Users can access listings and information from ESPN, the all-sports cable television network, through ESPN Inside Info. You also can E-mail the network's analysts and SportsCenter hosts. BBSes and chat rooms are here, too. Finding specific information on individual teams is easy. Click on the Jump menu, select the A-Z Index command, and type the team name. To access fantasy league information, click on the Fantasy Games button at the main ESPNet screen.

Best feature: Easy access to detailed individual team reports

Worst: Only one service-sponsored fantasy league

Cost: $9.95 per month for five hours of basic connect time (some features carry additional charges); $2.95 for additional hours

Phone: (800) 776-3449; (914) 448-8000

CompuServe

Click on the Go button and type **sports** to enter the *Sports Illustrated* magazine area, which is CompuServe's main sports area. You can preview *Sports Illustrated* under the SI Magazine button a day or two before it hits the newsstand. The SI Forum hosts BBSes and chat rooms. Fantasy leagues are under the Fantasy Sports button. Click on the Go button and type **fans** to enter CompuServe's Sports Forum area, which contains more chat rooms and BBSes.

Best feature: Largest offering of general sports news

Worst: Extra hourly charges for many sports areas

Cost: $9.95 per month for unlimited basic services; $4.80 per hour for extended services

Phone: (800) 848-8990; (614) 529-1340

BACK ISSUES AVAILABLE!

BACK ISSUES

Turn to the article index to check the listing of hot topics covered in each back issue. Then mark the issues you want sent to us.

1993*
- ___ March
- ___ June
- ___ July
- ___ August
- ___ September
- ___ October
- ___ November
- ___ December

1994*
- ___ January
- ___ February
- ___ March
- ___ April
- ___ May
- ___ June
- ___ July
- ___ August
- ___ September
- ___ November
- ___ December

1995*
- ___ January
- ___ February
- ___ March
- ___ April
- ___ May
- ___ June

"GUIDE TO" ISSUES
- ___ Guide To Windows $7.95
- ___ Guide To Windows Troubleshooting $7.95
- ___ Guide To Online Services $7.95

BONUS OFFER!
- ___ ALL THREE GUIDES FOR $18 (shipping and handling included)

* All back issues listed are available for $7.95 each

May 1994

August 1994

November 1994

April 1995

SUBSCRIPTIONS

SAVE 42% OFF THE COVER PRICE!

Circle one:

PC NOVICE	PC TODAY
☐ 1 year $24	☐ 2 years $42
BEST DEAL! ☐ 3 years $59	

BOTH MAGAZINES
- ☐ 1 year $42
- ☐ 2 years $84

Outside U.S. $46—AMR (Canada/Mexico $32) • Payable in U.S. funds • Allow 10 days for delivery

BINDERS

Each binder holds 12 issues and there's no need to punch holes! Removable metal spines allow you to view the issues easily while in the binder or to rearrange them for your convenience.

Protect your investment with a PC NOVICE/PC TODAY embossed binder and start building your own reference library today.

- ___ PC NOVICE BINDER(S) $12.95 each
- ___ PC TODAY BINDER(S) $12.95 each

MAIL THIS PAGE TODAY TO:

PC NOVICE
P.O. Box 82511
Lincoln, NE 68501-2511
ATTN: Back Issues

OR PHONE: 1-800-367-7333

8 a.m. — 5 p.m. CST

Please Print:

Name: _____

Phone: _____

Company Name (if using business address): _____

Address: _____

City: _____

State: _____ ZIP: _____

☐ Payment Enclosed (Add $20 to your total for all overseas shipments)

0423

Please bill my:
- ☐ Visa ☐ MasterCard
- ☐ AmEx ☐ Discover

Acct. #: _____

Expiration Date: _____

Signature: _____

(All orders must include payment in full or credit card information)

1993 January • February • March • April • May • June • July • August • September •

February 1994

June 1994

February 1995

March 1995

DECEMBER 1993
Securing A Little Hard Disk Insurance
Deleting Program Groups In Windows
Taming The DOS Demon With Menus And Shells
Customizing The Spreadsheet
    With Add-In Software
The Final Report On Microsoft Access, Part IV

JANUARY 1994
Choosing The Right Word Processing Program
Random Order Note-Taking Programs Organize
Scattered Thoughts and Information
Using True Type Fonts In Windows
Adventures Online: Role-Playing Via Modem
Font Software Introduces Some New Characters
Portable Computer Accessories:
    Don't Leave Home Without Them

FEBRUARY 1994
Upgrading Your PC
Finding And Sorting Files
Expansion Cards:
    Adding New Capabilities To Your System
Heavenly Computing With Bible Software
Laser Jet Tips And Tricks

MARCH 1994
Setting Memory Free In DOS
Swapping Cells For Panes:
    The Best Windows Spreadsheets
Branching Out Electronically:
    Computerizing Your Family Tree
Configuring And Troubleshooting Windows

APRIL 1994
Steering Onto The Superhighway
Figuring Out What's Inside Your PC
Fax/Modems:
    A Marriage Made In Hardware Heaven
Your Child's First Computer
Chipping Away At Intel: 486 Clones

MAY 1994
5 Fun Things To Do With Your Computer
Home Office Software You Can't Do Without
Macs And PCs Measure Up
Troubleshooting Printers

JUNE 1994
Special Multimedia Issue:
    What Is Multimedia?
    Multimedia Upgrades Kits
    Ten Great Programs To Start Your Library
The Magic Of DOS 6.0's UNDELETE Command
Installing A Sound Board

JULY 1994
Vacation Planning Software
How To Uninstall Software
Microsoft Works For Windows
"Insufficient Memory" Message: What To Do

AUGUST 1994
Special Graphics Issue:
    Draw And Paint Programs
    Windows Word Processors Do Graphics
    Getting Graphic With Charts
Decompressing Without Disaster
Fighting Off Computer Viruses

SEPTEMBER 1994
Computers And The Classroom
Information Interstate:
    Superhighway Or Superhype?
Upgrade Portable Computers
Brainstorming Software

OCTOBER 1994
PC's And TV Merge On A Screen Near You
Bring Your Printing Up To Speed
Putting MemMaker To Work
Games For Grownups
Smile! Your Computer Can Be A Photo Album

NOVEMBER 1994
Buying Into The Computer Age
20 Questions—Answers That Will Help You
    Choose A Computer
Weighing Your Fax/Modem Options
Upgrading Random-Access Memory

DECEMBER 1994
Installing A Hard Drive
Computer Accessories For Kids
What's At The End Of The Rainbow?—
    Color Inkjets
Inside CD-ROM

JANUARY 1995
Focus Your Financial Picture
Let There Be Sound:
    Installing A Sound Card
Your Computer's Backup Plan
Portables vs. Desktops:
    It's A Split Decision
Graphical Interfaces For The Internet

FEBRUARY 1995
Dealing With DOS Error Messages
The Making Of A Microprocessor

486	Motorola
Pentium	Alpha
PowerPC	Alternative Options

Building A Better Word Processor, Part II

MARCH 1995
How To:
    Track Mutual Funds
    Get Started With Quicken
    Replace Your CMOS Battery
    Hook Up A Cellular Modem
    Recycle Old PCs
    Plan For Tax Time

APRIL 1995
PIMs—Your Key To An Organized Life
Meet Microsoft Bob
Replacing A Pentium Microprocessor
Troubleshooting Video Output
Using DOS 6.2's MemMaker

MAY 1995
The 10 Best CD-ROMs For Windows
How To Install A CD-ROM Drive
Interactive Encyclopedias
Troubleshooting General Protection Faults

JUNE 1995
True Data Disaster Stories
Windows Menuing Programs
Installing An Internal Modem
Practical Portable Printers
Working With Microsoft Word 6.0, Part III

October • November • December 1994 January • February • March • April • May • June • July • August •

• February • January 1996 December • November • October • September • August • July • June • May • April

• March • February • January 1995 December • November • October • September

Remote Control Software: How Does It Work?

You sit down at home to make some finishing touches on tomorrow's presentation. As you turn on your home PC and insert the floppy disk containing the presentation, you realize that you've forgotten an essential file at work. It's too late to go back to the office, but you need to finish that presentation. What do you do?

The advent of remote control software has eliminated some of this anxiety for people who shuttle work between home and office PCs. Instead of having to remember to bring files home, users of remote control software can access their office PCs from home.

Remote control software lets one computer, called the **guest** or **remote PC**, control another computer, called the **host PC**. The remote PC can use the host PC's files, applications, and peripherals via a modem as if you were sitting in front of the host PC. For example, any keystrokes or mouse movements made on the remote system would change the look of the host PC's screen, as if they were made on the host machine. In short, anything you can do while sitting at the host machine can be done from the remote computer via remote control software and a modem.

How Does It Work?

To access your work PC from home, you need two things: remote control software and a modem.

Remote control software must be installed on both the host and remote machines. It comes in DOS and Windows versions, causing some confusion for first-time users. Just because you buy remote control software for Windows doesn't mean you won't be able to access DOS. Both versions let you work in DOS or Windows; you would only choose one over the other depending on whether you like the DOS or Windows environment. (*NOTE: Remote control software should not be confused with remote access software, which is a far more technical undertaking than many novices would care to work with.*)

Instead of having to remember to bring files home, users of remote control software can access their office PCs from home.

Modems, which provide a link between computers via telephone lines, must be installed on both the host and remote PCs. To use remote control software, all you do is leave the host system in the "waiting for a call" mode when you leave the office. A PC will stay in this mode until it's manually deactivated. When you're ready to access your office PC, turn on your home computer, enter the host system's telephone number, and your modem will do the rest. Once the connection is made, you're free to download files to the remote PC, use an application on the host machine, or print a document at work—all from the comfort of your home.

Should You Buy?

The advantages of remote control software are endless. It gives people who work on computers the luxury of going home at 5 p.m. to spend the evening with their kids and then finishing up last-minute work after the kids go to bed. It eliminates the hassle of running back to the office when you've copied every file—except the most important one—onto a floppy disk to bring home. It lets mobile PC users access their office PC to check their E-mail, no

matter what country they're in. Remote control software also helps users by letting technical support people access systems to troubleshoot hardware and software problems.

Instant file transfer has become one of the most used features of remote control software, letting users transfer data between office and home PCs in a matter of minutes. The transfer process is completed by either dragging and dropping the file into the appropriate directory or answering some basic questions.

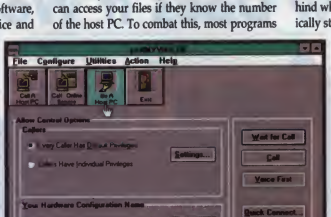
All of these programs have a chat area that lets users of remote PCs talk with people at host machines. A final advantage of remote control software is its ease of use. Once the software is installed, using the program is easy. The point-and-click interface makes it simple for even the most inexperienced computer users.

But the list of negatives of remote control software is as long as the list of plusses. First, from our experience, the installation of these programs isn't always as easy as the advertisements claim. Many times, these programs change the video, or display, **drivers** on your computer, making the products incompatible with other applications on your PC. For example, one program we tested was incompatible with Sound Blaster, a popular expansion card that gives sound to **CD-ROM** (**compact disc, read-only memory**) programs. To get the remote control software to work, we had to remove the sound card. This is a hassle for people who want to use remote control software and their CD-ROM drive.

Another installation problem is the software's inability to locate the modem or the communication (COM) port on your system. Many times, the COM port is being used by another device, and the settings must be changed before the remote control software will work.

Another disadvantage is that many of these programs must install **TSRs** (**terminate-and-stay-resident programs**) on the host machine to support the software. (A TSR is a program running under MS-DOS that's designed to remain in memory even when it's not running so that it can be popped up in any program.) When TSRs are loaded into a machine, they take up memory and sometimes limit the programs that can be run. However, many remote control software manufacturers have noted the TSR-related problems and have removed them from the latest versions in an effort to make remote control installation and startup easier.

Security is another problem because anyone can access your files if they know the number of the host PC. To combat this, most programs have password protection, which requires the user to enter a special password before accessing the host machine. The programs also have a call-back feature, in which the host calls a remote PC after receiving a call and identifies the caller. This prevents unauthorized users from accessing host machines because the host PCs only know to call the telephone number of authorized users.



From this screen, *pcANYWHERE* users can place the host machine in the "waiting for a call" mode when they leave the office.

Remote control software also wastes electricity because users leave the host machine running when they leave the office. To overcome this, a remote power on/off device was invented. This device plugs into both the telephone line and modem. The host PC is then plugged into the power bar, which in turn is plugged into an electrical outlet. Then, the host machine is left off until a remote system calls. The remote power on/off device turns on the host PC's power when the call comes in and shuts it off when the call is finished.

The biggest disadvantage of remote control software is slowness. Once you're connected to a host machine, a single click of the remote PC's mouse requires the entire screen to redraw itself. This is incredibly frustrating when you're trying to double-click on an icon to open it. And forget using some of the host PC's applications because the transfer rate is too slow. For example, using a host PC's word processing program wouldn't be feasible unless you don't mind not seeing what you're typing. The cursor is always several words behind what you've typed, and you must periodically stop to wait for the computer to catch up with the keystrokes.

Even though these products have drawbacks, as most products do, they're also incredibly helpful once they're up and running. To help those of you who decide to purchase remote control software, we've reviewed three of the more popular programs on the market today to let you know which ones to look for.

pcANYWHERE

Symantec's *Norton pcANYWHERE for Windows* 2.0 is one of the fastest, most popular remote control software titles available. In the 2.0 version, Symantec has changed some of pcANYWHERE's features to make it easier to use. For example, installation has been simplified by the Smart Setup, which automatically detects your PC's configuration, eliminating many setup problems. Symantec has eliminated the use of TSRs and no longer replaces the video, mouse, or keyboard drivers.

The DOS and Windows versions of pcANYWHERE must be purchased separately; both versions, however, let buyers use a network or modem connection. It supports Windows 95 and takes advantage of some of its features, such as the use of the right mouse button. Users can click the right mouse button anywhere in the program and a cue card will appear with an explanation to give users instant help, says Joe Licari, senior product manager for the pcANYWHERE product family.

The Norton Assistant feature walks you through a task step by step to avoid confusion. The file transfer in this program is easy as long as you read the manual. Other features include **file synchronization**, which automatically transfers the latest versions of files, and **file cloning**, which makes the drives on both PCs identical. This software contains the standard security features along with a feature that restricts certain callers from accessing certain files or from uploading/downloading entirely.

One final highlight of pcANYWHERE is its technical support. These people were very helpful when we had installation problems, spending hours on the phone trying to figure out why the product wouldn't work.

Norton pcANYWHERE for Windows 2.0
Symantec Corp.
$129 (estimated street price)
(800) 441-7234
(503) 334-6054

ReachOut

ReachOut Remote Control 5.0 from Stac Electronics prides itself on its speedy file transfers and easy installation, as well it should. Stac has developed a technology called SmartSend, in which only the changes, and not the entire file or directory, are sent over modem lines. Stac also has devised a way to compress files, which speeds up file transfers and means users don't have to send so much information over telephone lines, says John Bromhead, vice president of marketing for Stac. All you do is drag and drop the file to be transferred, and the software does the rest.

RapidSync is another high point of ReachOut. With this feature, users can make their home PC's files and directories look identical to their office PC by clicking on Synchronize in the Directory menu.

Stac also has combined the network and modem versions in one package. Therefore, if users ever want to upgrade from a modem to an ISDN line, they can continue to use ReachOut without having to buy another product, Bromhead says. (ISDN [Integrated Service Digital Network] is a type of digital phone line that gives users a faster connection between PCs than a modem can provide.) ReachOut 5.0 also provides users with DOS, Windows, and Windows 95 capabilities in the same product in an effort to keep home and office PCs as similar as possible.

ReachOut is now totally Windows-based in order to eliminate the DOS TSRs that were required in earlier versions. As for security, ReachOut offers its users an intruder guard, which contains passwords and call-back.

A final highlight of ReachOut is its Setup Pilot, which helps new users install the program quickly. This function works out which COM port your machine is connected to and how fast your modem can run. A new user only has to tell ReachOut the name of their modem and the password they want to use.

ReachOut Remote Control 5.0
Stac Electronics
$100 (estimated street price)
(800) 522-STAC
(619) 794-4300

CoSession

Even though Triton Technologies has released a second version of *CoSession for Windows*, it still lags behind its competitors in speed. It's almost impossible to double-click to open an application because it takes so long for the action of the mouse to transfer over telephone lines. The program is also really slow in rebuilding the screen every time you click the mouse.

The chat area was difficult to use, too, because the screen kept blinking when a person tried to type. For example, when someone would type on the host PC, the person on the remote computer couldn't see what was being typed because of blinking lines that ran through the screen.

In *CoSession's* chat area, users at the remote PC can talk with others stationed at the host computer.

Its lack of speed aside, CoSession does have some highlights. It has made its installation process as easy to use as possible, with the product automatically detecting competitors' remote control programs and telling you how to fix what they have changed. The product also locates the COM port to which the modem is attached and sets the baud rate for you. CoSession doesn't change any of the system's drivers; it does, however, make minor changes to the System.ini file. When it does this, it tells you where the original file is saved so it can be restored if you ever decide to uninstall CoSession.

This product contains the modem and network versions in one package, which is an advantage over earlier versions. It doesn't have Windows 95 compatibility, though Peter Byer, vice president of marketing and sales, says that the third version of CoSession (to be released in September) will include this feature.

A final high point of CoSession is the level of security it provides. Not only does the product have call-back, but users also have the ability to restrict what drives and directories remote users can access. CoSession users are able to blank the host machine's screen or lock its keyboard if they're doing something from the remote PC that they don't want the host computer's user to see.

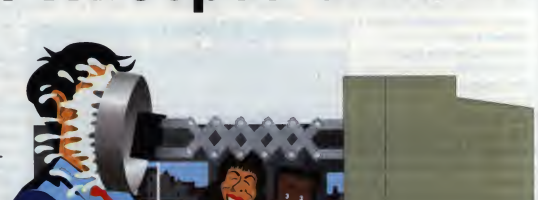
CoSession for Windows 2.0
Triton Technologies Inc.
$70 (estimated street price)
(800) 322-9440
(908) 855-9440

Two final notes about remote control software. First, you should look for products that have an uninstall feature, which the above three do. With this feature, you don't have to access the System.ini file to delete any changes made by the program if you decide to remove the remote control software. Simply double-click on the Uninstall icon and you're finished.

Second, plan to spend time on the telephone with technical support to get the software installed. These aren't the types of programs that you install and run in 10 minutes. There are too many variables at work for that. We installed four of these products, and each required us to spend a *minimum* of 30 minutes on the telephone trying to get the COM ports, baud rates, and modem types correct. So don't get frustrated if the software doesn't work right away. If it does, feel fortunate; you're one of the lucky ones. ●

by Juliet Oseka

Virtual Whoopee Cushions



PCs Offer Fertile Playground For Pranksters

Just as computers have made everyone else's job easier, they've opened new doors for practical jokers. With hundreds of small, easily altered details that lend themselves to tampering, PCs might be viewed as the hand buzzer of the modern office. While the self-appointed corporate funnyman of yore would slip a buzzer into a handshake, today's jester may change a word processor's default type color to white on a white background and chuckle as the user scrambles to find why the keyboard won't work.

Depending on one's perspective, such office antics may be viewed as riotous entertainment, harmless fun, or sophomoric idiocy. The same prank even may fit all three categories when it occurs at different times and places. Following the "Practical jokes don't hurt people, people do," philosophy, we present our roundup of computer pranks that found their way to the *PC Novice* offices. Some of the tricks are easily-remedied, while others toe the line between full-blown sabotage and light-hearted fun.

Before we divulge the details, a bit of prepank training is in order. We asked an expert on the lighter side of life for guidelines on when practical jokes can be entertaining and when they may cause a workplace civil war. C.W. Metcalf, chairman of the board of C.W. Metcalf and Co., consults companies, including many *Fortune* 500 corporations, on how to help employees use humor to cope with workplace stress and change.

Metcalf says it's important to differentiate between humor and comedy. Comedy, he says, is about jokes and gags, while humor is a way of looking at life that involves taking yourself lightly and your problems seriously. Virtually anyone can learn to use humor effectively, but, Metcalf says, good comedy takes a rare talent.

"Less than 2% of the population can remember and tell jokes well," he says. "If comedy was so easy, we wouldn't be paying millions of dollars to people like Roseanne and Sinbad to make us laugh."

The comedy/humor distinction is an important one, Metcalf says, because comedy is riskier than humor, which is usually confined to a view of oneself. Poorly executed comedy can lead to sexual harassment suits or the appearance of nonadult, unintelligent behavior. The three classic guides for comedy (rapport, timing, and place) help define appropriate action. You can get away with more if you know someone well. Metcalf describes one joke where workers sounded a boat horn in a new employee's cubicle to signal lunch. The victim, who had been unemployed for nine months and felt great pressure to keep the new job, had a stroke. Timing and place work together. A prank may go over well at lunch or in the carpool but not in the boardroom.

Metcalf says practical jokers must always be ready to apologize if a victim takes the joke the wrong way. The prank is constructive in an office setting only if it is a way of friendly bonding and not a tool for division. Finally, he says, jokers should remind themselves that they usually find their own jokes funnier than everyone else does.

"If you're really good, you'd be getting paid," Metcalf says. "So you're probably not that good, and you're definitely not as good as you think you are."

Remember that pranks, even small ones such as removing the ball from a mouse, may draw a smile from the victim the first time, but they become exponentially irritating each successive time. An occasional, well-planned practical joke may liven up the office, but constant pranksters are monotonous and likely to be shunned both socially and professionally.

Hardware Pranks

The following hardware tricks are largely benign. They're easy to set up and easy to repair. While they may lack the creativity of many software pranks, they're still likely to baffle many users, especially beginners.

Cables. Unplug the cables that connect the mouse, printer, keyboard, and monitor to other system parts or to the power outlet, but leave the cable plug gently resting in its connector, apparently still connected. The device won't work, but a quick glance to make sure everything is plugged in won't reveal the problem. A partially connected monitor cord can produce an image that's tinted the wrong color and send the user looking through the software to discover the problem.

Some cords may not work unless the thumb screws around the plug are tightened. Loosen the screws to complicate things further.

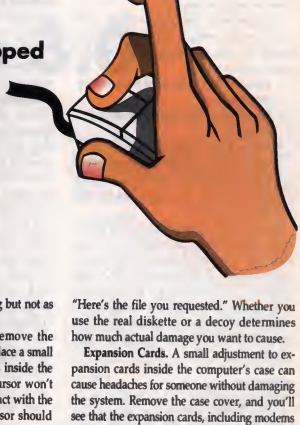
Monitor dials. As every kid who's fiddled with a TV set knows, carefully adjusted contrast and brightness dials can produce a blank screen. It's surprising, then, how many adults jump to the conclusion that either the computer or monitor has failed and run for technical support when someone turns down the dials. This is especially entertaining when used as a colleague takes a break away from his desk after spending the last two hours creating a report. Note that the power light on the front of most monitors is often a giveaway that the monitor is really working.

Keyboards. Some keyboards, such as those from Gateway 2000, can be **remapped**, meaning the user can reassign key functions in an arrangement different from the manufacturer's. These keyboards can be rearranged so that the *A* key types *S*, for example, or the SHIFT key performs the TAB function.

A more primitive keyboard tampering method involves physically prying the plastic caps off keys and sticking them back in the wrong places. This is especially bewildering for victims when used with vertical function keys; the person is unlikely to remember if the function keys originally alternated from side to side or ran F1 through F5 on one side and restarted with F6 in the next column. Once you've switched the key caps, the victim will probably spend a while deciding just where that F5 key belongs.

Mouse. In addition to toying with the mouse cable at the back of the PC, you can plague someone's existence by entering Windows and changing the mouse settings. Enter the Main group, then Control Panel, then Mouse. You can swap the mouse buttons so that most click operations, which normally use the left button, now require the right button. This means Windows must be opened and closed and icons moved, for example, with the right button. Unless the victim knows the buttons have been swapped, it may seem the entire mouse has failed since the left-button clicks have no effect. You also may change the double-click speed in the Mouse group. Slide the bar toward the fast end and only someone with fingers like The Flash can execute a double-click. Again, it will seem that the mouse is faulty since the victim can't double-click. You also can change tracking speed, which when set to slow is annoying but not as troubling as the previous tricks.

Until users find the problem, swapped mouse buttons may demand dexterity.



Beginning pranksters like to remove the mouse ball, but a better trick is to place a small piece of clear tape over the rollers inside the mouse and replace the ball. The cursor won't move since the ball can't make contact with the rollers and indicate where the cursor should move.

Printers. Simple and annoying, a tried-and-true dot matrix printer gag is to adjust the point at which the printer begins writing on the paper so that text is printed over page breaks and gaps appear in the middle of pages. This trick may be as simple as twisting the paper up or down an inch or two after someone has adjusted the paper as they want it. Some printers let you adjust the length of the form to fit different sheets of paper. When the form length is properly adjusted, pressing the form feed button will move the top of a sheet into printing position. If the form length doesn't match the paper in the printer, text will appear in all the wrong places.

You also can swap an old ribbon cartridge for a new one inside the dot matrix printer or trade an old toner cartridge for a new one in a laser printer. Both are guaranteed to annoy the person who just replaced the cartridge.

Diskettes. Magnets and diskettes are a bad mix that can be paired for sabotage or entertainment. Magnets can hopelessly garble a diskette's magnetically stored information. If you enjoy seeing panic in the eyes of co-workers, stick a diskette to their desk with a magnet and add a note saying something like "Here's the file you requested." Whether you use the real diskette or a decoy determines how much actual damage you want to cause.

Expansion Cards. A small adjustment to expansion cards inside the computer's case can cause headaches for someone without damaging the system. Remove the case cover, and you'll see that the expansion cards, including modems and sound boards, are physically connected to the system by snapping into slots. If you slide one side of the card out of the expansion slot, the system won't recognize the board, and the modem or sound board won't work. The victim may search through software settings and call tech support before anyone thinks to make sure the cards are properly connected.

DOS Tricks

Prompt. DOS error messages will chill the blood of most computer users, so there's much fun to be had in planting bogus messages at the DOS prompt. The prompt can be easily customized by changing lines in the Autoexec.bat file, which runs each time the computer starts up. To access the file, type **edit autoexec.bat** at the C> prompt. Change the prompt message by changing the information behind the PROMPT command in the file. Delete whatever comes after the command, leave a space, and type your text message. No matter what message you enter, the prompt works as it did before your changes so that typing **win** or **dir**, for example, still takes you to Windows or lists a directory. For a more convincing joke, type **cls** in a line above the PROMPT line to clear the DOS screen and

display the "error message" alone. Some favorite messages include:

- **Please Enter Your Password:** No password is really needed, but the victim may wonder why their system suddenly demands a secret word for access.
- **Unrecoverable Data Error! Reformatting Hard Drive . . .**
- **Floppy Drive Error: Harden Disk and Re-Insert**
- **System Error: System Not Plugged In**
- **Read Error Data Drive: Data Scrambled**
- **Boot Failure!! Reset System . . .** A gullible victim may reset the PC, only to find the same message and try again.

Ansi.sys. The intricacies of this device driver are challenging for beginners, but if you learn how to control Ansi.sys, you'll have access to a variety of controls over the DOS environment. You can move the default cursor position, alter the prompt, change the country setting for the keyboard, and change system colors. (For more about Ansi.sys, see your DOS manual.)

Windows

Startup. Each program with an icon placed in the Startup group will automatically open when Windows is started. Drag all of the program icons into Startup and the victim may have to wait several minutes while Windows opens a stack of application windows.

Icons. Select an icon by clicking on it once, then choose Properties from Program Manager's File menu. The dialog box lets you throw several monkey wrenches into an icon's operation. Delete the current description and change it to the name of another program, swapping Cardfile for Calendar, for example, or typing a word that gives no indication of the program's nature. Then swap the command line for that of another program, typing **cardfile.exe** in place of **calendar.exe**. Note that when you change the command line, the icon may change to fit the new command line. You can use the Change Icon button and Browse to assign the command line the icon for another program. When these tricks are combined, you can create a Calendar icon that is labeled Calendar but opens Cardfile when double-clicked. If several icons are so altered, the desktop becomes a hopeless maze for victims. Some jokers have used this setup for tricks such as linking game icons to an executable file that logs the victim off the office network.

Desktop Mirage. This Windows joke was inspired by the venerable cartoon trick of painting a tunnel on a cliff wall to draw the bad guy into a jarring misjudgment. Use the PRINT SCREEN key to take a picture of the Windows desktop, complete with icons and windows, which you then can use as Windows wallpaper.

First, set up the desktop with an open Program Manager and several minimized icons. Drag the icons up a bit from the bottom of the screen so that the whole icon will be captured. Press PRINT SCREEN to capture the image, then enter Paintbrush. From the View menu, choose Zoom Out, then choose Paste from the Edit menu, and choose Paste a second time. Select Zoom In to view your image. Now choose Save As under the File menu, and save the image in the .BMP format so that it can be used as Windows wallpaper. Enter the Main group, then Control Panel, then Desktop. In the Wallpaper box, use the pull-down menu to locate your image's file name. Click OK, and the false desktop will appear behind the real one. When the "real" icons are minimized, you may

even fool yourself in trying to decide which images are active and which are just pictures.

General

Our parting shots may prove handy for jokers in all environments.

Spreadsheets. By changing the formula in a cell critical to major calculations, you can skew the results of an entire spreadsheet. This trick requires caution. If your tampering changes a figure that's not immediately apparent, the victim can unwittingly base reports and decisions on erroneous data. Make sure the changed formula produces an obvious error.

E-mail. Most E-mail systems automatically mark messages with the return address of the machine on which they were composed. Sneak onto a colleague's machine while they're away from the desk, and send E-mail messages that will carry their name. Again, use discretion since a message you may find funny could be taken differently by the recipient and cause trouble for the alleged composer.

Passwords. Most password systems display the word on-screen only as a series of asterisks. Change one letter of the password, and the user won't be able to get on with the old password or tell by the asterisks that it has changed. This works well with CompuServe, for example, since the software automatically reads the password from information the user typed during the initial setup. If you change the password in the setup dialog box, the victim can't log on to the service.

You also can change a Windows screen saver password. If the password dialog box

A bogus DOS error message can raise authentic terror in victims.

is on-screen, preventing access to the system, reboot the computer and restart Windows to get by the password. Enter the Desktop setup box and enter a new password. When victims return and find the screen saver running, they won't know the new password and will be unable to get by the screen saver, making them the latest victim of the '90s version of the seltzer-spraying flower. ●

by Trevor Meers

Ami Pro 3.0

Creating Documents

You're at work, and your boss is nagging you for a formatted schedule for his upcoming, week-long business trip. If you still had your trusty old word processor, you could whip off an attractive document in no time. But the company just gave you a new computer with a new word processor called *Ami Pro 3.0*, and you haven't had time to read the manual to figure out document formatting. What do you do?

Take a deep breath and choose the New command from the File menu.

When you do this, a New dialog box will appear on-screen. In this box, you need to select a **style sheet**, or a **template** (a blueprint), that will determine how your document will appear. The style sheet includes a page layout that determines the way the pages initially will appear and how the text will be formatted. There are several options in this dialog box.

The main part of the dialog box is the list of style sheets that you can select. The names of the style sheets are located in the box labeled Style Sheet for New Document. This list includes labels, letters, memos, envelopes, faxes, newsletters, articles, calendars, etc. After choosing a document format, there are several option boxes located beneath the Style sheet box.

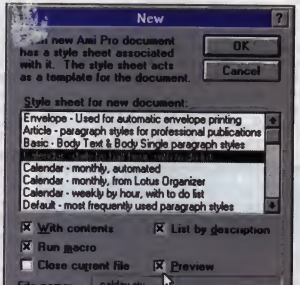
Style Options

With contents. When you select a style sheet, you can choose whether you want only the formatting information in the style sheet or whether you want the formatting information along with the contents (sample pictures and text found in the style sheet). When an *X* appears in this box, you've selected to open the style sheet with its contents.

List by description. The list of style sheets is displayed in two ways: alphabetically by file name or by description. It's easier to choose style sheets if they're listed by description, so make sure this box has an *X* in it.

Run macro. Certain documents require certain information. For example, the typical memo includes **default** information (information that appears in every document of this type) like the sender's name, title, company, address, and phone and fax numbers. It also includes information that changes from memo to memo, like the recipient's name, title, company, and address. If the Run Macro option box has an *X* in it, Ami Pro will prompt you for this information and place it in the document. If the box doesn't have an *X* in it, you must move your insertion point to the desired location and type the information.

Preview. You'll also want to see what some style sheets look like. The easiest and quickest way to do this is to preview it. To view a style sheet, click the box in front of Preview to place an *X* in it. The screen then will split; the style sheet will appear on the right side, and the dialog box will be on the left. You can select and preview other style sheets without leaving the Preview screen.



The New dialog box lets you select a style sheet, or template, for your document. Click the Preview box to view the template before opening it on-screen.

Once the options are set as you'd like them, or once you find a style sheet you like, click OK to create the document. Ami Pro will create an untitled document matching the format of the selected style sheet. If you selected With Contents, the style sheet contents will appear in the document. If you selected Run Macros, Ami Pro will ask you to enter certain information. Now you can enter your text.

After creating a document (and periodically while you're working on it), you'll want to save your text. To save a newly created, untitled file, choose Save from the File menu. A Save As dialog box will appear. In this box, enter a name for your file on the File Name line and select the drive and directory for the file in the Directories and Drives boxes. Ami Pro automatically adds the file extension .SAM to your document's name.

You can save changes to an already-saved document by saving it under the same name or saving it under a new name. To save changes to a document that's already named, choose Save from the File menu or click the Save SmartIcon (the second icon from the left with an arrow pointing inside a file folder). To save a document under a new name, choose the Save As command, and type a new name on the File Name line.

When you're finished with a document, your last step will be to choose Close from the File menu. If you're finished with the program, choose Exit from the File menu. Ami Pro will close all documents before it returns you to the Windows Program Manager. ●

by Lori Beckmann Johnson

Quattro Pro 3.0

Creating Budget Sheets

One of the most mundane tasks we have to do is balance our checkbooks and reconcile our budgets. While you might be one of the lucky few who don't have to watch their money closely, the rest of us need to monitor our expenses and compare our budgets to our actual expenses.

You can simplify this task with a three-column budget sheet in *Quattro Pro* 3.0. The first column can detail the type of expenses you incur each month. The second and third columns will have dollar figures that correspond to the expenses detailed in the first columns.

Creating Your Budget

To begin, select New from the File menu to make a new, empty worksheet. Column width can be adjusted by placing your pointer on the right-hand vertical line of a cell, pressing the left mouse button, and moving the line left or right; releasing the mouse button sets the column width.

Now you need to define the range for your first column. In our spreadsheet, we highlighted cells A5 through A16. Click on A5, drag the pointer down to A16, then release the mouse button. All of the cells, except A5, will be highlighted. (The first cell is always left white even though it's highlighted.)

Now click on the Normal button located above your worksheet (in our illustration, it is already set to Currency). This button formats the cells you selected to contain data that you type into each cell as "text" and won't be used for calculations.

To define your second and third columns, using our example, click on cell B5, move the pointer to the right to include cell C5, then drag the highlight to cell C16. When you release the mouse button, columns B and C will be highlighted. Click on the Normal button and select Currency to format the block of cells to hold dollar figures.

At this point, it would be wise to save your spreadsheet. To do this, select Save As from the File menu and name your file in the File Name box.

Now you need to label your worksheet columns. Click on cell A4, type **Expense**, and press ENTER. Using the same steps, name cell B4 "Planned," and label cell C4 "Actual."

Filling Your Budget

Click on cell A5 in the Expense column, type in a kind of expense, such as "Rent" or "Mortgage," and press ENTER. Follow the same steps to enter your other expense categories.

Now you can enter the dollar values into the Planned column. Repeating the same process you used to fill the Expense column, fill the Planned column with your expected monthly expenses for each of the categories. Then fill the Actual column with the dollar amounts paid on last month's bills.

Before proceeding, save your work by clicking on the Save button on the button bar (the one with a disk and a blue arrow).

Working With Figures

One of the hardest things to learn when using spreadsheets is the dictionary of commands. Quattro Pro avoids this hassle by supplying buttons that do this work for you.

Let's try the SpeedSum button so we can see the sum total of how much we expected to spend last month. Click on cell A17 and type in the word **Subtotal:**. You can make it bold by clicking on the button with the bold *B* on it.

Now select cells B5 to B17 in your Planned column. (Again, the topmost cell will be selected but will remain white.)

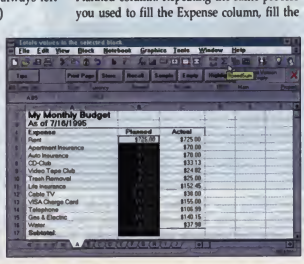
Now click on the SpeedSum button, which has the Greek Sum symbol printed on it (it looks like the English letter *E*). If you have a hard time identifying any buttons on the button bar, drag the mouse pointer over all the buttons, and Quattro Pro will give you the name of a button in a yellow text box. In the illustration, you can see how Quattro Pro identifies the SpeedSum button, as well as the highlighted cells you wish to add.

The sum of the selected dollar values will appear in cell B17. Save your work with the Save button, then repeat this process for the Actual column. When both columns have been summed, select cells B17 and C17 and click on the Bold button to make these two sums stand out.

The SpeedSum button can be used to add any columns of figures, and there is no limitation on the number of cells that can be summed. Now you have a basic budget! You can add more information as you go, format text and numbers to stand out, or work other mathematical marvels on your budget. ●

by Robert Mullen

***Quattro Pro* provides a SpeedSum button that helps you add columns of figures fast.**



Microsoft Word 6.0

Adding Keyboard Short Cuts

icrosoft Word for Windows 6.0 packs enough punch for any word processing job. It combines a full-featured text editor with desktop publishing, drawing, charting, and forms creation capabilities. The application is so flexible, you'll find it easy to tailor the program to the way you work.

Consider the Menu bar. Located just below the program's Title bar, it displays menu headers such as File, Edit, View, Insert, and Format. These drop down to reveal lists of Word commands. Whenever you need to perform a task like creating a new file, finding a word or phrase, inserting a footnote, or printing, you can click on a Menu bar item and select a command from the menu. You also could use your mouse to click on a button in one of Word's toolbars or ruler, but these alternatives provide access only to Word's most common commands.

Luckily for users, Word's default menu structure is not etched in stone. You can modify it to add, remove, or reposition a menu item, or include your own **macros** (keyboard short cuts for a series of commonly used keystrokes and commands). You also can set up or change keyboard short cuts for most menu items. For example, Word Count in the Tools menu has no keyboard short cut. Here's what you do to assign one.

Before making permanent changes, remember the maxim "If it ain't broke, don't fix it!" To safeguard Word's original menu structure, make changes on a practice menu "template." This will let you recover your original menus in case of error. To work with a practice template, create a file called Practice.dot by copying Word's Normal.dot template.

1. Select Open from the File menu. In the Open dialog box, choose Document Templates (*.dot) in the List Files of Type box.

2. Select Word's Template folder in the Directories window. Choose the Normal.dot file, then click OK.

3. Once the file is open, choose Save As from the File menu and name the file Practice.dot.

4. After you create Practice.dot, choose New from the File menu, then enter Practice in the template box. This attaches the Practice.dot template to the new file.

5. Choose Customize from the Tools menu. When the Customize dialog box appears, click the Keyboard tab.

6. In the Save Changes In box, select Practice.dot.

7. Choose Tools as the Menu bar category to be modified. Select ToolsWordCount from the Commands box to view the short cut you want to change. No keyboard short cut for Word Count appears in the Current Keys box—that's why we want to add one!

8. Position the cursor in the Press New Shortcut Key box, then press the keyboard short cut you want to assign. If you choose one that is already in use, Word displays a message stating that the new short cut is currently assigned to another command. Try ALT-F12. If that is free, click on the Assign button. Click Close. Now when you click on the Tools menu, the Word Count command has an associated ALT-F12 keyboard short cut.

If you open a new or existing file and the Tools menu shows no modifications, it's because you haven't "associated" that new/existing file with your Practice.dot template. To attach the Practice.dot template to a file, choose Templates from the File menu. Click the Attach button in the Templates and Add-ins dialog box. Click OK. Now the Tools menu should list the short cut for Word Count. After you've worked in Word with the Practice menu changes for a while, make the change permanent by modifying the Normal.dot Word template following the steps outlined above. Once Normal.dot has been changed, it "attaches" automatically to all open files.

Whisk it Away!

If there is a Menu Bar item that you would like to "remove," press CTRL-ALT-minus key. When the mouse pointer changes to a bold horizontal line, position this line over the Menu Bar header you want to change, then click to select. When the menu appears, click the menu item you want to remove. That item will disappear.

Adding keyboard short cuts is as easy as clicking on scroll box options. To ensure that you're saving to the right template file, check the file name in the Save Changes In box.

You also can remove items using menu commands:

1. Choose Customize from the Tools menu.
2. Select Normal.dot in the Save Changes In box.
3. Click the Menu item you'd like to change in the Categories box.
4. Select the Command you want to remove in the Commands box.
5. Identify the menu in the Change What Menu box.
6. Locate the specific command in the Position on Menu box.
7. Click the Remove button.

If you don't like your menu-item changes, you can reset ***all*** built-in menus to their original state. Choose Customize from the Tools menu, then click the Menus tab in the Customize dialog box. Choose the Template you'd like to restore in the Save Changes In box. Click the Reset All button, then click Close. Resetting information in the Menus tab will not affect your keyboard short cuts. ●

by Carol S. Holzberg, Ph.D.

Lotus 1-2-3

WYSIWYG

ast month we described how to format cells to change the alignment of text labels and the display of values. The *Lotus 1-2-3 for DOS* 4.0 WYSIWYG (What You See Is What You Get) add-in program lets you enhance your worksheet further by using different fonts, sizes, color, shading, and styles such as bold or underline.

WYSIWYG gives you a variety of formatting, editing, and page-layout tools for creating presentation-quality reports that combine graphs, text, and data. It also lets you work with SmartIcons, which provide quick access to many Lotus features with a simple mouse-click.

The WYSIWYG menu options can be accessed by choosing Tools from the main menu and selecting WYSIWYG from the resulting list, or by typing a colon (:). Enhancements can be added to the entire worksheet through the :Display menu or to selected ranges through :Format. (For brevity, we will refer to menu names as they appear on-screen, i.e., :Display for the Display menu or :Display, Colors for the Colors option on the Display menu.)

While WYSIWYG attributes can be applied to cells before data is entered, it is easier to view your results if you enter data first.

Working With Color

If you have a color printer, or are tired of looking at black-and-white data on-screen, you can add color to your worksheet. When applying color, your data will be easier to read if all of your text is in bold. In our sample illustration, we highlighted the cells containing data and then clicked on the Bold icon on the SmartIcons palette.

We set a background color for the entire worksheet by selecting :Display, Colors, picking the Background option, and choosing a color. From the same Colors menu, you can select Frame to change the color of the worksheet frame (i.e., the row [1] and column [A] headings), and Cell Pointer to change the color of the cell pointer. *Note that these color changes do not save to disk and are lost when you exit Lotus.*

The Colors menu also lets you change the color of grid lines, text, negative numbers, cell borders, and drop shadows. From that same menu, you can choose Replace to change colors in your color palette by selecting numbers between 0 (black) and 63 (white). Remember, though, that the darker the color of your background, the harder it will be to see other elements in the spreadsheet.

To draw attention to certain ranges in our worksheet that displayed major headings and the names and sales totals of salespeople, we selected :Format, Color, and then Background to change the range background color from that of the worksheet.

Text colors can be changed for specified ranges. To change the color of your main heading, for example:

1. Select Colors from the :Format menu.
2. Choose the Text option.
3. Pick a color.
4. Highlight the cell in which the heading appears.

Other Enhancements

Drop shadows are an effective way of emphasizing data within your worksheet. To add a drop shadow to ranges B4..E4, B6, B10..E10, B13, and B17..E17 in our example:

1. Select Lines from the :Format menu.
2. Choose the Shadow option.
3. Highlight the Set option and specify the ranges.

WYSIWYG features let you enhance your worksheets with color and special effects, such as drop shadows.

The size and font of your text can be changed by selecting :Format, Font. Fonts can be added or generated through WYSIWYG options on the Lotus 1-2-3 Install menu. Up to eight fonts can be used within a single worksheet file.

Several attributes can be applied to the same cells. For our main heading, we changed the font and size, italicized the text, and changed the text color. We then added an outline by selecting :Format, Line, and choosing Outline.

You also can include light, dark, or solid shading to cells, and add single, double, or wide underlining. Choosing :Display, Options lets you hide or change the appearance of the worksheet frame and show or hide the worksheet grid. Clip art or graphs can be added by selecting :Graph, Add, and choosing the appropriate file.

SmartIcons

You also can make some formatting and WYSIWYG changes with SmartIcons. After highlighting a cell range, you can use SmartIcons to cycle through choices such as text or background color or outline and shadow options. If you are unsure about an icon's function, clicking on it with the right mouse button displays a descriptive prompt. One icon lets you copy the WYSIWYG attributes of a selected range to another (WYSIWYG attributes also can be saved and retrieved as Styles).

Helpful Advice

WYSIWYG features either can enhance or decrease the readability and appeal of your worksheets, depending upon how they're used. Overusing some options can make your worksheet look more like a computerized rendering of modern art than an effective presentation of data.

Formatting and WYSIWYG commands can improve the visual appeal of your worksheets. However, finished worksheets that look wonderful on-screen may print out with less than satisfactory results. Many features, particularly fonts and effects such as drop shadows, are printer dependent. ●

by Diane Walkowiak

WordPerfect For DOS

Programming Simple Macros

Remember the old days of TV, before channel surfing? When changing channels meant getting off the couch, walking to the set, and turning a dial? Now we enjoy the convenience of the remote control. Loosely speaking, a macro is like a remote control for *WordPerfect for DOS*.

A **macro** is a timesaving package of keystrokes. You record the keystrokes, and the task they perform, into a convenient and invisible package using a feature much like a tape recorder. Then you replay it whenever you need to repeat that task.

Macros generally perform specific tasks, such as typing a phrase or paragraph, formatting an envelope, or saving a file. (WordPerfect ships with a few predefined macros; look in the WordPerfect manual Appendix titled "WordPerfect Files" or "Program Files" for the list of macro files.)

There are two ways to name a macro. A macro can have a word name (up to eight characters), like "Letter," and is started with the Macro key, ALT-F10. You also can name one as an ALT key/letter key combination, such as ALT-L. These macros are executed by pressing the ALT key and a letter. (In *WordPerfect for Windows*, CTRL-SHIFT replaces ALT.) We'll focus on WordPerfect for DOS 5.1 and 6.0, but the concepts and most of the keystrokes are the same for any DOS, Windows, or UNIX version.

Naming Macros

Our first macro will print the current page:

1. Press CTRL-F10. In version 5.1, this key is called Macro Define; in 6.0, it's called Record Macro (or use the Macro option in the Tools menu). In 5.1, you'll now see the words "Define macro:" at the bottom left of your screen. In 6.0, a dialog box titled "Record Macro" appears.
2. To name the macro, hold down the ALT key and press *P*. (In 6.0, you'll also need to press ENTER.) It's not easy to get a list of your macros, so start a list on paper.
3. Version 5.1 users *only* will see a Description prompt. Type a brief description of the macro's function and press ENTER. The description is not important and is used only when viewing a file at the List Files screen with the Look feature.
4. The macro recorder is now turned on—after a moment you'll see the words "Macro Def" at the bottom left of your screen ("Record Macro" in 6.0). These messages tell you that you now can press the keystrokes to perform your task (*don't use your mouse except for the menus*).
5. Open the Print menu by pressing SHIFT-F7 or by selecting Print from the File menu. Press *P* to select the page. (In 6.0, you'll also need to press ENTER.)
6. Press CTRL-F10 to turn off the macro recorder.

Whenever you print a page from the document editing screen, point your cursor to the page you want and press ALT-P. (If you later try to record another macro with the same name, WordPerfect will warn you and give you an opportunity to edit the macro.)

Now we'll program a macro that prepares the top and bottom of the letter format, leaving you to type the meat of your letter. From a blank screen:

1. Press CTRL-F10.
2. To name the macro, type **letter**, then press ENTER. (Version 5.1 users can enter a description or press ENTER to skip it.)
3. To leave blank lines at the top for preprinted letterhead, press the ENTER key as many times as needed. Use the Date feature to type in the current date (SHIFT-F5, then *T* for text). Press ENTER two or three times. (You also can add other formatting.)
4. For the signature block, type **Sincerely** (or another phrase) at the left margin (preceded by formatting codes). Press ENTER four or five times to end the line and add space for your signature. Then type your name/title/company (preceded by any formatting codes). You may want to add cc: if you routinely send copies.
5. Press the Home key twice, then the up arrow to move to the top of the document. Use the down arrow to get to where you want to start your letter.
6. Press CTRL-F10.

To use this macro, begin with a blank screen and press ALT-F10. Type the name of the macro and press ENTER.

Once you're comfortable making macros to automate your routine tasks, you'll love them as much as your TV remote control. ●

by Kendall Callas

WordPerfect Macros

These macros are generally, **but not always**, shipped with *WordPerfect for DOS* 5.1 and 6.0. WordPerfect doesn't come with predefined ALT-letter key combinations.

Codes.wpm	Prints your entire document, including merge codes and reveal codes, to hard copy.
Endfoot.wpm	Changes endnotes to footnotes.
Footend.wpm	Changes foodnotes to endnotes.
Labels.wpm	Defines paper size and type for printing labels, instead of manually formatting with SHIFT-F8. Process is sped up when you type in an Avery label number.
Calc.wpm	Displays a calculator for integer math.

Excel 5.0

Linking Workbooks

If you work with several *Microsoft Excel* 5.0 workbooks, you probably enter some data into several worksheets. However, you don't have to do this. Instead, you can create links between a cell in one workbook and source data in another. Once these links are established, Excel can automatically update a workbook when you make changes to the source data.

For example, let's say you have a spreadsheet to track your department's expenditures by a monthly and year-to-date basis. You also have a departmental summary spreadsheet that stores sales, budgeted sales, expenditures, and budgeted expenditures by a year-to-date basis. You probably take the year-to-date expenditures from the first workbook and type them into the second. You could, however, link these workbooks so when your expenditure totals change, your summary spreadsheet is automatically updated.

Before we explain the details of creating these links, there are some terms with which you should be familiar:

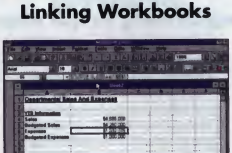
Source workbook. This workbook is the source of information. The expenditure workbook in the above example would be a source workbook.

Dependent workbook. This workbook contains a link to another workbook and depends on information from that workbook. The summary workbook in the above example would be a dependent workbook.

External reference. This is a reference in a cell to information in another workbook. An external reference formula in the dependent workbook would require information from a source workbook. In our example, a cell in the summary workbook would contain an external reference formula that calls for information from the expenditure workbook.

Creating A Link

An external reference formula tells Excel where it can find the information it needs to place in the cell. It does this by giving Excel a trail to follow to find the data. The trail includes the location of the workbook on disk (sometimes referred to as the **path**, this includes the disk drive and the directories), the name of the workbook, the name of the worksheet, and the cell reference.



Cell B6 of this dependent workbook contains an external reference. If you look at the formula for cell B6, you can see that the information in the cell comes from cell B13 on Sheet1 of the Source workbook.

The formula also has some specific syntax. The path, the workbook name, and the sheet names are enclosed in a pair of single quotation marks (' '). The workbook name is enclosed in square brackets ([ ]). An exclamation point (!) follows the closing single quotation mark and precedes the cell reference.

If our source information is located in cell B13 on Sheet1 of a workbook called Expense.xls (found in the MKTSALES directory of the C: drive), the external reference formula would be:

=c:\mktsales\[expense.xls]sheet1'!b13

NOTE: If the worksheet referred to in the external reference formula is in the same directory as the worksheet containing the external reference formula, typing the path is ***not*** *necessary. This is why the formula in the graphic on this page doesn't include the disk drive and directory information.*

Creating a formula linking workbooks can be just as easy as creating formulas within workbooks. This is because you can use the mouse to select cells on a sheet in another workbook to which you want the formula to refer.

To do this, in the dependent document, type the equal (=) sign in the cell in which you want the external reference. Then switch to the source workbook (use the minimize keys—*don't exit the dependent document*) and select the cell that has the information that you want to be shared. It will be highlighted with a blinking, dashed box. Press ENTER, and Excel enters the reference automatically.

The Link Command

Once a link is established between workbooks, you can use the Links command in the Edit menu to manage source data for the active workbook. When you click the Links command, the Links dialog box appears on-screen, listing the sheet name used in each external reference formula. When you select a file name from this list, you may:

- Open the source workbook by choosing the Open button.
- Update the data by clicking Update Now. Excel will update the links, and the source workbook will remain closed. If the data is current, the Update Now button will be inactive.
- Change to another source workbook by clicking the Change button. In the Change Source dialog, box you can select a different workbook as your source workbook.

Helpful Hints

When saving and moving linked workbooks, you should remember the links. Here are some tips:

Save the source workbook before the dependent workbook. That way, the formulas in the source workbook have always been calculated, and the dependent document is current.

If you name or rename a source workbook, the dependent workbook must be open for the external reference formula to be automatically updated with the new name.

If you change the name of a source workbook while the dependent workbook is closed, or if you move linked workbooks to different directories, you must change the external reference formulas in the dependent workbook to include the new name or full path of the source workbook. ●

by Lori Beckmann Johnson

Adding Ports To Your PC

"Connect your modem card to COM port 1 . . ."

"Plug the printer cable into the port labeled LPT2 . . ."

If you've ever installed additional hardware to your computer, you've probably run across similar instructions that require you to plug the device into one of the ports on the back of your system.

But what happens when you have more peripherals than ports? Most computers come with only a couple of ports for devices such as mice, modems, and printers. But, when you want to add another device, maybe a second printer or a scanner, you find yourself left holding the plug.

We'll show you how to add a few more ports to your computer for about $50 to $60. We will be using the I/OAT55 Serial/Parallel Adapter card by Boca Research Inc. (407/997-6227) to demonstrate the basic steps most cards require.

If you purchase an I/O card from a vendor other than Boca, you may have to install additional software or complete steps other than those detailed here. Be sure to consult the installation manual before you begin.

PORT TYPE	I/O ADDRESS	IRQ ADDRESS
COM1	03F8	IRQ4
COM2	02F8	IRQ3
COM3	03E8	IRQ4
COM4	02E8	IRQ3
LPT1	0378	IRQ7
LPT2	0278	IRQ5

Figure 1: Specific COM ports and LPT ports usually correspond to specific IRQ settings and I/O addresses.

Before You Buy

Prior to making a trip to the computer store to purchase an I/O (input/output) card, take a minute to figure out what kind of ports you need.

Ports come in all shapes and sizes. Usually your computer will come equipped with one **parallel port**. Parallel ports commonly feature 25 holes and are referred to as LPT1 or LPT2. Most often, they are used by peripherals such as printers.

Your computer will probably offer two other ports. These **serial ports** may feature nine pins or 25 pins. Commonly referred to as COM1, COM2, (and in DOS 3.3 and later) COM3, and COM4, these ports connect devices such as mice and modems to the computer (although most computers now include special round PS/2 ports designed especially for mice).

Which of these ports do you need? That depends on what you want to connect to your computer. Maybe you have an external modem or a scanner that requires a serial port or an additional printer that requires a parallel port. The peripherals you will be using determine what port combination you want. Perhaps you want an expansion card with one parallel port and two serial ports (as we will be using here). Or, perhaps you just want one of each. I/O cards are available with a variety of combinations.

Addressing New Ports

Once you have determined the kind of port you need, the next step is to determine if the computer has the room to *address* that port.

All your hardware devices are connected to your microprocessor through wires called **interrupt request lines** (IRQ). IRQ lines let a hardware device request its share of attention from the microprocessor. All of your hardware devices are assigned **I/O addresses**. These addresses offer a way for the microprocessor to figure out where the device is located.

But your computer only has so many of these settings. On top of that, the serial and parallel ports can only use specific IRQ lines and I/O addresses. So before you can add more ports, you need to be certain that there will be locations available to accommodate them.

One way to find out what is being used by your computer is through the Microsoft Diagnostics program found in MS-DOS 6.0 and later, as well as Windows 3.1. Type **msd** at the DOS prompt (*making sure you have completely exited Windows*) and press ENTER. When the program opens, select the LPT Ports button and/or the COM Ports button to determine what serial and parallel ports are being used. Then select the IRQ Status button to find out what addresses are already occupied. (Be forewarned; although you may not have any devices plugged into the serial ports on the outside of your computer, that does not mean that the COM ports are idle. Some devices, such as your modem, may use internal connections.)

Sometimes MSD is not entirely accurate. If your computer is using COM3 and COM4, MSD may bump up these settings and indicate they reside at COM1 and COM2. (To be sure what port is being used, it's a good idea to determine the correct setting according to its I/O address, which won't be "bumped up.")

If you don't have MSD or you want a more reliable port assessment, Boca Research offers a program on its bulletin board system (407/241-1601) that determines what COM ports are being used and suggests what port and IRQ address your new I/O card or modem should use. It's called *ComCheck* and is available to be downloaded for free.

A Little Give & Take

As we stated earlier, your serial and parallel ports operate at specific IRQ addresses. Refer to Figure 1 to determine what ports generally correspond to what IRQ addresses.

By default, your computer is aware of what COM ports and LPT ports correspond to what IRQ addresses. There are times, however, that you can change and tinker with these settings if you want to add more ports. For instance, occasionally two peripherals can share a LPT port and two LPT ports can share one IRQ address, especially if they are two printers you would not use at the same time.

It's not, however, a good idea for devices to share a COM port or an IRQ address. (If you check Figure 1, you will notice that COM1 and COM3, as well as COM2 and COM4, share the same IRQ address.) You wouldn't want your mouse on COM1 with an address of IRQ4 and your modem on COM3 with the same IRQ address. Your mouse is almost always communicating with your computer, and it could confuse your system if you tried to dial up an online service while you were using your mouse.

Does this mean that you can never use COM3 and COM4 if you plan to use COM1 and COM2? Not necessarily. If your port and your software are flexible, and if you are willing to do a little give and take—such as giving up a second LPT port—you can use one of those extras. Check out the box of the I/O card or the installation instructions. If it indicates that the jumpers (we will talk about these later) can be set to IRQ3, 4, 5, or 7, you are part way there. Then check the software that operates the hardware. For instance, if you plan to operate a modem on COM3 via IRQ5, check your communications software or your online service software. Most let you determine what port to use,

but do they also let you determine the IRQ setting? If so, then you are in business. Or, is the software a Windows-based program? When you set the port and IRQ settings in the Port application in the Windows Control Panel, the Port application ensures that all Windows programs will use the correct settings.

I/O Installation

Now you are ready to roll up your sleeves and get started. You will need a screwdriver, the instruction manual, the I/O card, and the extra serial port assembly (if applicable).

1. Configure the Boca card and tell it and the computer what ports and addresses they will be using by setting **jumpers**, which control the way the board operates. Jumpers are actually little metal pins, mounted side by side on the circuit board. Settings are changed by moving a little plastic block that contains tiny electrical connectors over specific pins. This is probably the most difficult part of the installation process.

On our circuit board, there are three lines of jumper pins, each with two plastic blocks (see Figure 2). The top line controls the parallel port while the bottom two control Serial port A (which is the port on the main I/O card) and Serial port B (the additional port assembly that connects to the main card through a cable).

Tackle the parallel port first. The left three pins control which LPT port we will use: LPT1 at 0378 or LPT2 at 0278. Make sure the parallel port you choose is not already being used and that you use the corresponding I/O address.

Place the plastic block over the pins labeled 0378 and LPT to select LPT1 or over the pins labeled 0278 and LPT to select LPT2 (the pins are next to each other). Set the second plastic block in the corresponding IRQ setting: over IRQ7 and LPTINT for LPT1 or over IRQ5 and LPTINT for LPT2. When removing a plastic block, pull straight up from the card. To insert a block, line up the holes in the block with the pins and push down until the bottom of the block is flush with the base of the pins.

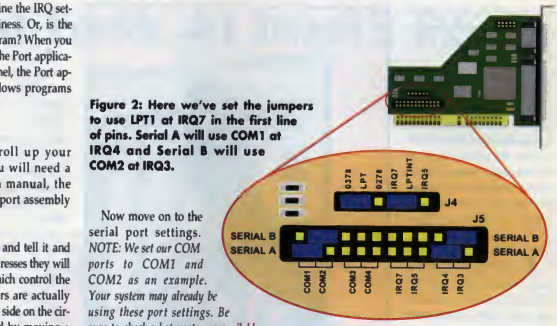
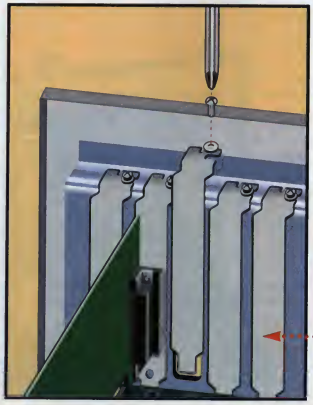


Figure 2: Here we've set the jumpers to use LPT1 at IRQ7 in the first line of pins. Serial A will use COM1 at IRQ4 and Serial B will use COM2 at IRQ3.

Now move on to the serial port settings. *NOTE: We set our COM ports to COM1 and COM2 as an example. Your system may already be using these port settings. Be sure to check what ports are available and adjust your jumper settings accordingly.*

The six pins on the left of both serial lines control the COM ports, and the six pins on the right control the IRQ settings. It's not hard to set up these jumpers because each of the settings is labeled. For example, we wanted to set Serial A on COM1 at IRQ4 (see Figure 2). So we set the first block over the first and second pins to the left (labeled COM1) and the second block over the tenth and eleventh pins (labeled IRQ4). Then we set Serial B on COM2 at IRQ3. The first block went over the second and third pins to the left (labeled COM2) while the second block went over the last two pins to the right (labeled IRQ3).

If you don't want to use Serial B at this time, you can **disable** the port so the system won't recognize it. Disabling a port is as simple as removing the plastic blocks from the Serial B line of pins.



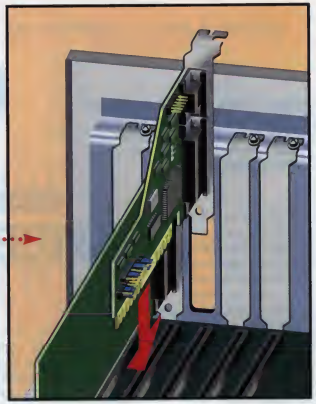
2. Unplug the system and the monitor from the electrical outlets, then disconnect the monitor from the computer. Move the monitor out of your way and remove the cover from the computer case. You may need a (Phillips) screwdriver to remove screws from along the edge of the case, or you may have to unclasp hooks to slide the top off.

3. Before touching the circuitry inside your computer, ground yourself to eliminate any static electricity that may "zap" the computer components. To do this, touch the metal frame of the power supply or the metal chassis of the computer.

4. Locate the expansion openings at the back of the computer. You will need to remove one, or two (if you are adding all three ports), metal expansion slot covers. It's best to choose a slot consecutive to other expansion cards. This

will make it easier for you to add more expansion cards in the future and avoid being "wedged in."

To remove the slot covers, you may need to remove screws holding these covers in place. If necessary, gently move aside any cables, cords, or even the power supply to access the screws. Put the screws aside for safekeeping and slide out the metal covers.



5. Remove the expansion card from its antistatic bag. The back of the expansion card has a metal plate that will slip into the place of the metal slot cover you just removed.

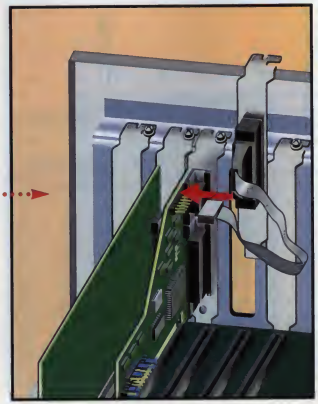
As you slide the plate into place, you also must slide the edge of the card (the side with gold etchings) into an **expansion slot**, which is a long socket inside your computer that provides a connection to your computer's main circuit board, the **motherboard**. The slots will be located either on the bottom (so the cards are installed vertically) or on the side of the computer (so the cards are installed horizontally). The gold etchings on the side line up with metal contacts inside the expansion slot. The contacts, in turn, connect to pins on the motherboard and tell the computer how it should be addressed.

It may take some pressure to get the card into the slot. If you have trouble, push one side of the card in at a time, and *don't push too hard*. It will go in eventually with a little finagling.

6. If you are adding both serial ports, slide the additional metal plate into another empty opening at the back of your computer. Although this add-on does not require that you install anything in an expansion slot, you do need to plug the interface cable that runs from this port into a plug on the I/O card. This plug is located in the corner diagonal to the jumpers.

7. Using the screws you removed from the metal plate covers, screw the new plate(s) tightly in place.

8. Replace any cords or components you may have moved to get to the expansion cards. Replace the computer's cover and clasp any hooks or secure any screws you removed. Reconnect your monitor, and plug in everything.



9. Reboot your computer. At the DOS prompt, restart MSD or Boca's ComCheck program. Check that you have the appropriate number of ports. If you work often in Windows, go into the Ports application and make sure your new COM ports are using the correct settings.

If these new settings don't appear, turn everything off, reopen your system, and check that you have set the jumpers correctly.

If you've configured your system to use COM3 or COM4 and the settings don't appear, your system may be unable to recognize any ports past COM2. This happens occasionally in some name-brand computers. The **BIOS** these systems use try to avoid conflicts by acting as if these ports don't exist. (The BIOS is a set of routines that work with a computer's hardware to support data transfers between various elements of a system.) If this is the case, Boca offers a (free) fix-it utility called *Dosports.exe* on its bulletin board that lets your computer see the additional ports by adding another line to your Autoexec.bat file.

There's Nothing To It

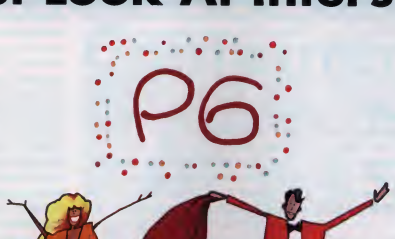
The actual installation of Boca's I/OAT55 Serial/Parallel adapter was a snap, although initially it was difficult to figure out how to set the jumpers and to push the expansion card into the slot. In fact, the whole installation probably will take from 15 minutes to a half hour.

The process can be well worth your while when you consider the benefit of being able to add all kinds of new hardware to your computer. It's also a handy process to know if you plan to add faster ports for faster modems or other more advanced devices in the future. ●

by Cindy Krushenisky

Special thanks to Jamie McCarty and Dave Johnston at Boca Research for their assistance with this article.

First Look At Intel's P6



Two years after the first Pentiums appeared on the market, Intel is preparing to introduce its new P6 processor chip, another stage in the evolution of personal computing power.

Details of the new chip were introduced this February at the annual IEEE International Solid State Circuits Conference, an industry meeting where technological innovations are presented and discussed.

The P6 chip, which will execute roughly 300 **MIPS (Millions of Instructions Per Second)** at an initial clock speed of 133 megahertz (MHz), is scheduled for release in the second half of 1995. As a comparison, its speed will be about three times faster than the 100 MIPS of the 60MHz Pentium and about twice the speed of the 100MHz Pentium. If you look back 20 years at Intel's 8080, which ran at 1 MIPS, you can see the increasing power of microprocessors.

"The pace is accelerating," says Joanne Hasegawa, an Intel spokeswoman. "In the little over two years since the Pentium was introduced, we have gone from 60MHz to 120MHz."

High Performance

The P6 will use a power supply of 2.9 volts and will have four integer units, compared to less-sophisticated two integer units for the Pentium and three for Motorola's PowerPC. The P6's design has been described as "Dynamic Execution," representing the next step beyond the **superscalar** advances in the Pentium processor. (Superscalar technology allows microprocessors to move information through two parallel pipelines instead of one.)

Dynamic Execution is a combination of technologies, such as **multiple branch execution, data flow analysis, and speculative execution**, which are intended to keep up a constant flow of data, increasing the efficiency and speed of the processor.

Multiple branch execution increases the amount of work available for the processor to execute while data flow analysis schedules instructions to be executed when ready, independent of the original program order. The P6 is kept as busy as possible with the use of speculative execution, which anticipates and executes the instructions that are most likely to be needed.

Who Benefits?

The applications that will benefit most from the power of the P6 are desktop applications, such as image processing and software-only video conferencing. Applications that process large amounts of data, such as databases, will also benefit.

"The early adapters, the power users, will welcome this product," Hasegawa claims. The P6 probably won't be the choice of the average computer user because of the high price and the lack of need for such computing power.

What the P6's introduction does for the average user is drive the price of the Pentium down, making it more affordable, as the P6 is established as the high end of performance. Another benefit is continuing advances in software capabilities.

"People can anticipate a lot more interesting software," Hasegawa says. "Applications such as video conferencing, 3-D, multimedia . . . they will be more sophisticated and more interactive."

Debate continues over whether **RISC (Reduced Instruction Set Computing)**, such as that used in the PowerPC, or the **CISC (Complex Instruction Set Computing)** architecture in **80x86** machines is preferable. (CISC chips recognize a large number of complicated instructions and compute them efficiently. This causes a slightly slower performance rate than RISC chips, which execute simple instructions.) The CISC architecture makes high performance processors harder to design and build, but its appeal lies in the enormous x86 software base. (80x86 computers are based on Intel's line of microprocessors, such as the 386 or 486.)

Intel and its competitors Advanced Micro Devices Inc. (AMD), Cyrix Corp., and NexGen Inc. are betting the ability to run existing x86 software will serve them well in the marketplace. Chip designers claim that deficiencies can be overcome without converting to full RISC technology, and that next-generation processors may further blur the line between the two technologies.

What Should You Buy?

The pace at which computer technology is advancing can be overwhelming, particularly when trying to make a purchase decision. Adding to the confusion are changes in microprocessor technology such as RISC-like architectures, which are making speed ratings in megahertz less meaningful.

When Intel was virtually the only x86 source, the general rule was that the bigger the

Is The M1 Faster Than The Pentium?

Is Intel's control of the lucrative x86 market unshakable? The Pentium floating-point bug, which was a flaw in advanced mathematical calculations, made Intel seem vulnerable. Challengers such as Cyrix, NexGen, and AMD are introducing innovative chips designed to compete with Intel's Pentium and P6. The superscalar architecture of Cyrix's M1 chip, which was scheduled to be launched in mid-June 1995, most closely parallels that of the Pentium. Its Pentium-compatible pinout means that existing Pentium motherboards will require few modifications to support it.

Both the Pentium and M1 are superscalar, with one part of a pair of instructions sent to each pipeline. The Pentium can issue instructions to both pipelines only under certain restrictions, while the M1's design and seven-stage pipeline will allow it to expand the number of cases where instructions can be paired, increasing throughput.

A limiting factor in superscalar architectures is that one of the paired instructions may require data from the other instruction. This can create a delay, known as a **read-after-write (RAW)** dependency, while one instruction waits for the other to write the data it needs to the appropriate register. Data forwarding techniques allow the M1 to forward the result from the leading instruction to the following one without waiting for the first one to complete its result storage. The M1 also implements data bypassing and out-of-order completion capabilities to minimize the impact of data dependencies.

The M1 provides 32 general-purpose registers to bypass the limitations of the eight registers available in the x86 architecture. Cyrix says that a definite advantage of the M1 is that the chip will fit into the P54C socket and won't require new motherboards.

"We chose an open approach, rather than proprietary," a Cyrix spokeswoman says. "Our x86 software compatibility is a plus."

Retaining that compatibility is key for Cyrix's future chip developments. "We don't anticipate a move to RISC technology," the spokeswoman says. "The line is blurring between RISC and CISC, and the same techniques are being used in both architectures. By remaining in native mode, we will have fewer potential compatibility problems."

To compete with Intel, competitors must ensure that their processors can be manufactured economically. The M1's initially large die size, twice that of the 90- and 100MHz Pentiums, put it at a disadvantage since fewer chips can be produced per silicon wafer. Intel has pointed to the M1's large die size as a liability that will make the M1 more expensive to produce.

However, Cyrix says it laid out the M1 conservatively to allow it to run on a broad spectrum of manufacturing processes, before settling on a manufacturing agreement with IBM Microelectronics and SGS Thompson. Cyrix is now shrinking and altering the chip's layout, which should reduce costs and make it more competitive.

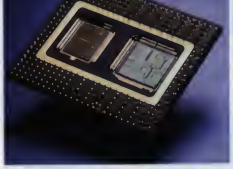
There has been some debate as to whether the M1 will be a rival to Intel's P6 or the Pentium. The Cyrix spokeswoman says that the 100MHz M1 is "definitely sixth-generation performance" and that the M1's architecture will allow it to run 30% to 100% faster than current Pentium processors, depending upon the benchmark used. With the upcoming release of Intel's 133MHz P6, with speeds twice that of the 100MHz Pentium, Cyrix will have to deliver on its claims to stay competitive. ●

processor number and megahertz speed, the better. One could feel confident that a 25MHz 386 was better than a 16MHz 386, but not as good as a 25MHz 486. Intel began to confuse matters with its DX and SX jargon and by abandoning numbers altogether with the Pentium. The increased presence of other chip vendors, coupled with technological advances, leaves the mind spinning as you wrestle with all the processor choices.

Not surprisingly, Hasegawa advises users to buy a Pentium processor, pointing out that "the 486 is going to be obsolete by the end of this year." However, users will have many choices besides Intel. If Intel competitors come through on their claims of chip compatibility and performance, users shouldn't detect any difference between one type of microprocessor and another. Differences will lie in cost, how much performance you get for the dollar, and the type and number of applications you can run.

Is a P7 Chip in the Future?

The P6 could represent Intel's last pure x86 chip. Last summer, Intel and Hewlett-Packard announced a joint research and development agreement. Industry observers have speculated that the partnership will result in the P7 chip, a microprocessor design offering compatibility with the 386, 486, and Pentium architecture and HP's own PA-RISC architecture. A P7 release date has been rumored to be in the late 1990s.



Intel says its P6 chip will run at twice the speed of the 100MHz Pentium chip.

The P7 is said to be a RISC-like chip having x86 emulation, allowing downward compatibility with x86 machines but edging Intel closer to full RISC technology. Industry observers argue that such a chip won't be able to compete with the RISC technology offered in the PowerPC, but Intel denies that it needs full RISC implementation to compete in the marketplace. A possibility is that the P7 architecture could leapfrog over existing RISC architectures, which will be 10 to 15 years old at that point.

Intel representatives are reluctant to confirm the development of the P7 chip. While admitting that its development may be possible from the Intel/HP agreement, Hasegawa says that the P7 is "not necessarily the product that will result from this alliance."

Just how the Intel/HP alliance will play out is unclear, but one thing is certain: PC processors will continue to evolve as we move into the next century. ●

by Dianne Walkowiak

When Are Small Computers Too Small?

Two trends are constant in computing—smaller and faster. Faster computing is the trend most people want. Microprocessors digest instructions faster than ever. Modems transmit data faster. CD-ROM drives access information faster. Just as the Digital television advertisement says, mankind craves *speed*. You never can have enough computing speed.

Computers are smaller than ever, too. Desktop computers occupy less desk space. Portable computers are easier to transport. Some specialized computers fit in your pocket or on your wrist, looking like something out of a "Dick Tracy" comic strip. It seems like a never-ending spiral of smaller and smaller hardware. While the trend of faster computers is in demand, though, the smaller trend isn't always desirable.

Eventually, the spiral hits a point where the diminutive size of the hardware becomes a shackle to practical and productive computing. Typing on a regular-sized keyboard is difficult enough for some of us; typing on a pocket-sized keyboard is a fruitless undertaking. Developing a spreadsheet on a calculator-sized screen is nearly impossible.

When does a small computer become too small for its own good? We've reviewed a few portable computers that attempt to provide that elusive combination of top-notch transportability with solid usability. We'll let you know which brands stopped the spiral at just the right point.

On The Road

Portable computers are easily transported from place to place, while **desktop computers** are designed to remain in one place. Portables contain battery power capabilities and are designed to withstand the minor jars and jolts associated with constant movement.

Portables are further defined by their size, weight, and components. A **notebook computer** weighs five to 10 pounds. Notebook computers, which are about the size of a paper notebook, are especially popular with today's portable computer users. Some notebook computers are loaded with multimedia features, which add to their weight. **Subnotebook computers** are smaller still, weighing less than five pounds. While a notebook computer's keyboard is similar to a desktop keyboard in key size and spacing, a subnotebook usually has a smaller-than-normal keyboard and a smaller display screen.

Beyond subnotebooks are **handheld computers** and **personal digital assistants** (PDAs), both of which can be held in one hand. These don't provide the computing flexibility of a desktop or notebook, though. For that reason, we won't discuss them here. Notebook computers have gained a strong foothold in the portable computing market, so we'll concentrate on subnotebooks.

Subnotebook Features

Many companies that make the smaller computers don't like to use the word "subnotebook," saying it gives the perception of a subpar computer. Compaq, for instance, calls its Aero line "ultra-portable" computers.

None of the subnotebooks in this review contain built-in diskette drives. Among the computers used in this review, we found the keyboards require an acclimation period because the space between keys is much less than with a regular keyboard. You probably won't want to type on one of these keyboards all day, but they're comfortable for a few hours at a stretch. If you use numerous specialty keys (such as function keys or arrow keys), you'll be unhappy with the keyboards because such keys are smaller than normal. If you need a numeric keypad, you'll probably want an external one. The keyboards have numeric keypad capabilities, but they require use of a function key, and they're extremely awkward.

The small specialty keys make the pointing device especially important. Among the computers we reviewed, none of them had smooth pointing devices, whether they used a pointing stick (which looks like a pencil eraser) or a trackball. Before you purchase any notebook computer, you'll want to test the pointing device thoroughly to ensure you are comfortable with it.

Because computer manufacturers have different designations for their smallest notebook computers, our criterion for selecting computers for this review was weight—less than five pounds with battery.

Aero

The Contura Aero from Compaq of Houston provided the lightest computing package (5-1/2 pounds for all components—computer, battery, AC adapter, and diskette drive) in this review. Its keyboard was fairly usable until we needed the delete key or arrow keys, all of which were smaller than half-size. The display screen follows suit; it's a tiny 6-1/4 x 4-3/4 inches.

The Aero's pointing device is a trackball in the lower-right corner of the keyboard, with buttons on the right side of the computer. This setup is extremely awkward. If you're not conscious of the buttons, they're easy to depress when moving the computer or using the PCMCIA slot on the left side, which can cause numerous problems. The setup is impossible for a left-handed person to use.

We liked the Aero's strong online help features, which include a detailed computer term dictionary and a search mechanism for any type of problem. The online user guide is more detailed than the printed user guide; enough so that the manual isn't worth carrying with the computer. Unfortunately, the printed user guide is so brief that it didn't explain adjusting the screen brightness, which requires use of a special key combination. The online user guide gives instructions for adjusting the screen, but finding the instructions is difficult when you're having trouble reading the screen in the first place.

Like all of the portables we reviewed, the Aero uses an external diskette drive. But its drive connects through the PCMCIA slot, and the drive's communication time is aggravatingly slow. Other computers we reviewed use a serial port to access the diskette drive, which is much faster. About the only advantage we found with this is that you can use the diskette drive and a printer at the same time; most printers must connect to the serial port.

The Aero was the least expensive subnotebook we considered. The wretched pointing device configuration and the lack of computing power hurt the Aero's overall sharpness, though.

Aero
Compaq Computer Corp.
(800) 345-1518
(713) 370-0670

Strengths:
- Strong online help and referencing
- Inexpensive portable option

Weaknesses:
- Extremely awkward pointing device
- Slow diskette drive
- Screen is too small

Before you purchase any notebook computer, you'll want to test the pointing device thoroughly.

Liberty

Take one look at the Liberty computer from Gateway 2000 of North Sioux City, S.D., and you'll immediately see what sets it apart from its competitors—the display screen. It's 8-1/4 x 6-1/4 inches, making it much larger than any of the other options in this review. After using the Liberty's screen for a while, going back to the screens on the other computers was a major disappointment.

The Liberty was easily the most powerful computer we considered, too. It's available with either a 486DX2 or 486DX4 microprocessor, and eight megabytes (MB) of random-access memory (RAM) is standard. Available hard drives range from 340MB to 720MB.

The Liberty's battery life gauge can be run as a minimized icon, giving you constant battery power monitoring. You don't even need to use

Comparison Of Portable PC Features

PORTABLE COMPUTERS
Weight: Alone (in pounds)
Weight: Plus Battery
Weight: Battery + AC Adapter
Weight: All Components
Computer Size (in inches)
Screen Size
Keyboard Size
Regular Key Size
ENTER Key Size
ALT Key Size
Battery Life
Battery Charge Time
Battery Warning Time
List Price
Microprocessor
RAM
Hard Disk Size
Screen Type
Pointing Device
Portability
Battery Life/Indicator
Computing Power
Pointing Device
Keyboard Comfort
Screen Viewing Ease
Overall

(NOTE: Scale runs from one to five stars.)

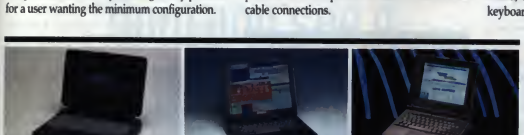
the gauge because the Liberty warns you when you have about 15 to 20 minutes of computing power left, which is plenty of time to complete and save your work. The computer weighs just 4-1/4 pounds with battery, making it very portable for a user wanting the minimum configuration.

The computer ships with a built-in infrared port, an important feature for portable computer users. The infrared port lets you exchange data with other infrared-equipped printers and computers without cumbersome cable connections.

Our complaints about the Liberty are fairly minor. The Liberty uses an EZ Point pointing device (one of the pointing sticks that resemble a pencil eraser) on the right side of the keyboard, and the buttons are located below the keyboard. The Liberty's pointing stick was one of the better ones we used, but we found all the pointing sticks to be awkward. A left-handed person could use the Liberty's setup, but it would be uncomfortable.

The user guide is skimpy, and the online help leaves a lot to be desired. The keyboard is adequate, but it uses half-sized arrow keys and function keys. The Liberty does have regular-sized PGUP and PGDN keys, which are helpful.

The Liberty's price tag is fairly high, but its internal and external features make it easily the best small-computing option we reviewed.



Aero	Liberty	Portegè
3.25	3.5	3.5
4.25	4.25	4.75
5	5.5	5.5
5.5	6.25	6.25
10.5 x 7.5 x 1.75	10 x 8 x 1.75	10 x 8 x 1.75
6.25 x 4.75	8.25 x 6.25	6.75 x 5.25
9.25 x 3.75	9.25 x 3.75	9.5 x 3.75
7/16 x 1/2	7/16 x 1/2	7/16 x 1/2
3/4 x 1/2	3/4 x 1/2	11/16 x 1/2
5/8 x 1/2	5/8 x 1/2	7/16 x 1/2
2-2.5 hours	2-2.5 hours	2.5-3 hours (a)
1.5-2 hours	1-1.5 hours	3 hours (a)
3-5 minutes	15-20 minutes	15-25 minutes (a)
$999-$1,799	$2,799-$4,499	$2,499-$4,399
486SX	486DX2 or DX4	486SX or DX2
4MB	8MB	4 or 8MB
170 or 250MB	340, 540, or 720MB	250 or 500MB
Passive matrix color or monochrome	Dual-scan color	Active matrix color
Trackball with buttons on computer's right side	EZ Point with buttons below keyboard	AccuPoint with buttons below keyboard
★★★★	★★★	★★★
★★	★★★★	★
★★	★★★★★	★★★★
★	★★★	★★
★★★	★★★	★
★	★★★★★	★★★★
★★	★★★★	★★★
Inexpensive computer, but it has some annoyances, especially its trackball.	Would get five stars with a better pointing device and a slightly lower price.	Battery problems aside, keyboard and AccuPoint are awkward to use.

(a)–We were unable to get two different batteries to hold a charge, so we couldn't test these items. The listed numbers are from Toshiba press releases.

Liberty
Gateway 2000
(800) 846-2000
(605) 232-2000

Strengths:
- Large screen
- Powerful computer
- Built-in infrared port
- Quick battery recharge

Weaknesses:
- Pointing device could be better
- Arrow and function keys are too small

■ Portègè

The Portègè from Toshiba America Information Systems of Irvine, Calif., is among the upper echelon of subnotebooks in computing power, but an awkward, cramped keyboard layout limits its overall appeal.

Before we discuss features, we must mention the numerous problems we had with the computer's battery. We tried two different batteries, both supplied by Toshiba AIS, and neither would hold a full charge. We tried numerous suggestions from the user guide and online

help features, but nothing solved our charging problem. We even found a section in the online help outlining an involved, six-step process for optimizing battery capacity. (No similar process was described in the numerous pieces of written documentation that shipped with the computer.) The online help recommends performing the six-step process once a week, which suggests it's difficult to get the batteries to hold a charge. But the process didn't solve our charge problem, either.

Besides the battery, the Portègè had other annoyances. One that could be costly to your data is the poor location of the computer's power switch. It's on the left side of the machine, opposite the ports for the diskette drive and the PCMCIA cards. It would be easy to hit the button accidentally when installing components in these ports.

While the keyboard's specialty keys are closer to regular size than the others, the Portègè keyboard has an extremely odd layout. The DELETE key, which normally is in the upper left of the keyboard, is on the bottom row next to the arrow keys, and we often hit the DELETE key when attempting to use an arrow key. The HOME key is to the right of the BACKSPACE key, and we often hit the HOME key when attempting to backspace. The BACKSPACE key normally is the farthest right key on the keyboard. The space between keys was especially tight, and the keyboard wasn't as comfortable to use as some of the others we considered.

Because the AccuPoint pointing stick is embedded in the middle of the keyboard, it's a little difficult to use. But its centralized location makes it comfortable for left-handers.

The Portègè has some solid features. The online help is extremely detailed and easy to use. Its active matrix color screen is one of the clearest available. Unfortunately, it's quite a bit smaller than the Liberty screen, and its brightness adjustment requires a keystroke combination. Certain Portègè models contain a 486DX2 microprocessor or 8MB of RAM, giving you plenty of computing power.

Portègè
Toshiba America Information Systems
(800) 334-3445
(714) 583-3000

Strengths:
- Bright, clear screen
- Plenty of computing power
- Strong online help features

Weaknesses:
- Batteries we tested wouldn't hold a charge
- Keyboard has an awkward, cramped layout
- Pointing stick is difficult to use
- Power switch is in a poor location

The biggest advantage of a subnotebook is its light weight and small size; you'll have to determine whether that's trade-off enough for the small keyboard, small display screen, and external diskette drive.

Other Choices

We were unable to receive review units for a few other subnotebooks, mainly because they were introduced too close to our deadline. We'll briefly discuss their features.

The Globalyst from AT&T Global Information Systems weighs less than five pounds with battery. The Globalyst models range from a 486SX2 computer with a monochrome display to a 486DX2 computer with a dual-scan, passive color display. The computer, which uses a trackball, has 4MB of RAM and a 200MB or 340MB hard drive. It has a price of $1,699 to $2,099. (For more information, call 800/637-2600 or 513/445-5000)

The HiNote Ultra from Digital Equipment Corp. weighs about four pounds alone and is only 1-1/4 inches thick, making it the thinnest small-notebook computer. Because it's so thin, it can support a larger keyboard than the other computers we considered, yet remains lightweight. A 486SX, DX2, or DX4 microprocessor and 4MB or 8MB of RAM are available. Its display screen is comparable to the Portègè. The HiNote Ultra uses a trackball and ranges in price from $2,099 to $4,999. (Call 800/344-4825 or 508/493-5111 for information.)

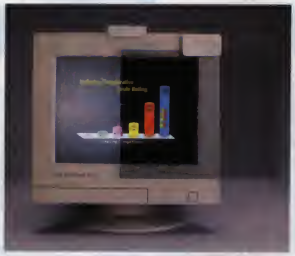
IBM's new ThinkPad 701 subnotebook has grabbed the mobile computing industry's attention because of its expandable keyboard. The 701 weighs just 4-1/2 pounds with battery, and it's about the same size as the other computers we reviewed. But when you open the computer, the keyboard expands to become a nearly full-sized keyboard, extending about one inch beyond each side of the computer. The ThinkPad's display screen is similar in size to the Liberty. A 486DX2 or DX4 microprocessor and 4MB or 8MB of RAM are available. The ThinkPad, which contains a built-in infrared port, uses a pointing stick. It is an expensive computer, though, starting at $3,799. (For information, call 800/426-2255 or 914/765-1900.)

If you're in the market for a portable computer, you'll want to consider subnotebooks. The biggest advantage of a subnotebook is its light weight and small size; you'll have to determine whether that's trade-off enough for the small keyboard, small display screen, and external diskette drive. Most people probably will opt for a more comfortable notebook computer, but for the true road warrior, a lightweight, subnotebook computer could be an invaluable weapon. ●

by Kyle Schurman

SRW creates magic....

Now you see it....



Unique Frameless Design - screen becomes "part of the monitor".

Adjustable to fit curved and flat monitors.

Now you don't

Optical Grade glass. . . enhances contrast.

Reduces glare and reflection up to 99% and eliminates static charge.

Minimizes eyestrain and fatigue

InVisible Shield
Anti-Glare Screen

Meets American Optometric Association specifications for VDT glare reduction

SRW Computer Components Inc., Co.
1402 Morgan Circle
Tustin, CA 92680
Toll Free: 1-800-547-7706
Fax: (714) 258-8037

Online Slime

Bright media spotlights on the seedier side of cyberspace are starting to raise public awareness about just what is out there—and many parents, fearful of what their children might find in some electronic back alley, don't like it.

Prosecutors and legislators are jumping into the fray, promising to crack down on what they call a lawless realm where anything goes. Sen. J.J. Exon, D-Neb., for one, is sponsoring an Electronic Decency Act in Congress that would ban the electronic transmission of lewd or obscene materials (see "Putting Porn In Its Place?" in this issue).

"I want to keep the Information Superhighway from resembling a red-light district," Exon says.

But many in the online community argue the Internet is taking a bad rap from recent publicity. After all, a trip to download some shareware or send E-mail to granny won't force dirty pictures upon innocent users. Laws designed to censor, they say, will only chill expression without solving the problem.

But no one familiar with the 'Net could deny that a lot of people—some of them children, undoubtedly—are downloading images that would probably be found illegal and obscene in almost any American court. Scenes of torture, mutilation, and rape are readily available to those who seek it.

"It's not only hard-core porn, but the hardest forms of adult porn," says Deen Kaplan, vice president of public policy for the National Coalition for the Protection of Children and Families. "These people won't police themselves. Children can get access to the hardest of the hard, and that is not acceptable."

Lawyers will probably make a lot of money over the next few years sorting out exactly how electronic communications will fit into constitutional law. Internet users and system operators shouldn't expect the dust to settle anytime soon as cyberspace fights to carve itself a niche in the First Amendment.

The Big Fuss

Computer obscenity is found in three basic places: dial-in bulletin board systems (BBSes), Internet sites, and Usenet newsgroups. Commercial online services, such as America Online, CompuServe, or Prodigy are relatively well-policed compared to the public Internet and private BBSes. Most of them also offer parental controls to help block out places such as chat areas where members might get out of hand. Most of these services, however, are now offering varying levels of access to the Internet at large, meaning even people without a direct link to the 'Net may still find objectionable material available.

Some of the most famous areas of decadence can be found in the thousands of newsgroups—the electronic bulletin boards where users post articles or files for one another to read—where both the best and the worst of the Internet are represented. Almost every conceivable topic is covered in one newsgroup or another. Some of the most famous newsgroups fall into what is called the "alt.sex" hierarchy. With names such

as alt.sex.pedophilia and alt.sex.bestiality, to name a couple, these areas have gained a lot of attention from curious newspaper reporters and Internet authors. The newsgroup alt.sex.stories recently garnered headlines as the spot where Jake Baker, a Michigan college student, chose to post a fictional tale detailing the torture and murder of one of his female classmates. Not all Internet sites carry the alt.sex groups, but it isn't hard for experienced users at such sites to connect to sites that do carry the newsgroups they want.

Computers offering obscene material to the Internet itself—the global "network of networks"—are within the range of anyone with some type of Internet account. Many college students are given free or low-cost Internet accounts, as are employees of some large companies and government agencies. In addition, commercial online services now offer certain types of Internet access to their millions of users.

The reason Internet pornography thrives has to do with the nature of the 'Net. No one computer controls the Internet. The information available on it resides on thousands of computers in dozens of countries. Even if, for instance, a college system administrator tried to block out certain parts of the Internet, technologically savvy students can easily find "back doors" to any destination. Today's Internet grew out of a Department of Defense project designed to preserve communications even if parts of the system were destroyed. It works.

The Battle Begins

While the Internet and its newsgroups get most of the attention, the opening skirmishes of the computer pornography battle were fought last year in Tennessee over a California adults-only BBS in Milpitas, Calif.

Some of the most notorious cases of computer obscenity hail from the hard drives of private BBSes. These systems have exploded across the American landscape in recent years. At least 60,000 are believed to be operational today. They range from commercially run news and information servers to amateur one-computer setups in basements and spare rooms.

BBSes are not the same as the Internet. While the Internet is a vast worldwide network of computers, the typical BBS is a single computer that users can dial into with a modem. In most BBSes, users trade messages or files with each other. In this way, BBSes become the forums of virtual communities made up of users who might live many miles away from each other geographically. It can be cheap and easy to distribute files via BBSes, making them the new favorites for pornography suppliers.

Users post most of the files on some BBSes, but on the Milpitas, Calif., "Amateur Action" BBS, a message proudly greets new arrivals with the information that all 25,000 files—including those picturing so-called child "nudists," scenes of bondage, and torture images—were scanned in by the operators themselves: Robert and Carleen Thomas.

Tennessee postal inspectors working with the local U.S. District Attorney's office last summer logged on to the Thomas BBS and downloaded a batch of sexually explicit images. Based on those files and a mail-order videotape also received from the Thomases, the Tennessee officials filed 11 federal obscenity indictments. Tried and convicted by a Memphis jury who found the images to be obscene, the couple now faces sentencing on all 11 counts, each of which carries a maximum sentence of five years in prison and $250,000 in fines.

While it is not illegal to possess obscene works, the Thomases were prosecuted under existing laws that ban the interstate distribution or sale of such materials. The Thomases' images were transmitted over phone lines across state lines. But obscenity law is full of gray areas, and the legal uncertainty over what exactly what is meant by the word "obscene" is fueling both the Thomases' appeal and their widespread support among onliners.

Good Guys?

Many long-time Internet users rile at nearly any form of perceived censorship in cyberspace. They know that laws designed to restrict BBSes also could be used against the Internet itself, where the popular sentiment is people simply shouldn't look at things that offend them.

Kaplan says a lot of the uproar in newsgroup postings and other forums comes from people who don't realize what is available at sites like the Milpitas BBS. There is no such thing as a harmless consumer of some of the Thomas images, he says, such as one that depicts a woman being nailed to a piece of plywood. Kaplan says he finds support for people like the Thomases surprising.

"It remains beyond me why people who care about computers want to make Thomas the posterboy for freedom in the information age," Kaplan says. "One would think he'd be the social pariah, but in many cases he's been embraced."

One of the groups giving Thomas' lawyers legal advice is the Electronic Frontier Foundation (EFF), a Washington, D.C., nonprofit group dedicated to the protection of civil

ONLINE TIPS FOR PARENTS

Because pornography is not difficult for children to find on computer systems, Deen Kaplan of the National Coalition for the Protection of Children and Families offers five tips for parents to follow:

- Keep the family computer in a family area of the house.
- Online services and the Internet are wonderful tools. The solution is not to take them away, but to participate in them with your kids. Make the computer a family activity.
- Protest to the service providers you use if you find objectionable images. Just as the shopping malls of America don't include adult bookstores, the online services of America shouldn't encourage pornography.
- Take time to understand how images are transferred on computers and what they look like. For example, images are frequently called "GIFs" after a common storage format. Learn to recognize computer porn if you find it and talk to your children about it.
- Write your state and federal legislators and encourage them to pursue appropriate legislative action to ensure children don't get access to this material. ●

liberties in cyberspace. Eric Tachibana, online services coordinator for the EFF, sees things a little differently than Kaplan. He calls Mr. and Mrs. Thomas "the good guys" who shouldn't be held to the standards of a community hundreds of miles from their home.

"They were fine in California, in their state," Tachibana says. "The Tennessee postman was looking for this. If it offended him, he should not have been going to look."

Tachibana says the crux of the Thomas case is the issue of community standards and who has the right to decide for all what is obscene.

Community Standards

The issue of community standards is at the heart of the Thomas appeal because it is at the heart of obscenity case law. In the landmark 1973 case of Miller v. California, the Supreme Court set up a three-part test for juries in obscenity cases. If jurors decide that the average person, applying contemporary community standards, would find the material appeals to the "prurient interest"; that the material depicts or describes, in an offensive way, sexual conduct prohibited by law; and the material lacks serious artistic, scientific, or literary value, it can be found obscene—and thus not protected by the First Amendment.

The "community standards" clause was designed by the Court to let conservative areas such as Memphis set higher standards than might be followed in a more liberal area such as California. In the aftermath of the Thomas ruling, some argue that a test designed to keep Californians from dictating law to Memphis also should keep Memphis from dictating to California.

Courts have allowed exceptions to this idea in the cases of mail-order pornography distributors who knowingly send materials to more conservative districts. A BBS operator, however, doesn't take an order, address a package, and drop it in the mail. Because the computer systems are automatic and users can call from anywhere, system operators get no chance for case-by-case decision-making. Even if the BBS only offered accounts to local citizens, someone might acquire an account, move away to Memphis, and continue calling without making the system operator aware of the change.

The EFF and others warn rulings such as the Thomas case give the most conservative districts in the nation—wherever they may be and whatever local standards they might follow—the ability to restrict what can be found on computers from New York to Los Angeles.

It would not only set the kind of national standard the Supreme Court hoped to avoid but would also make that standard more restrictive than has been allowed in many communities. System operators, not familiar with what might be considered obscene in an unknown town perhaps thousands of miles away, will be forced to censor from their computers material that may be perfectly legal in their own community.

But the alternative, Kaplan says—laws based on the community of origin rather than the community of receipt—would create "safe havens" where pornographers could ply their trade unhindered by the laws of the rest of the country. Courts have shown no willingness to move toward such a system, he says.

"Community standards are going to be outstripped by the growth of the Information Superhighway."

— **Deen Kaplan, National Coalition for the Protection of Children and Families**

Courtroom Chaos

In the short term, Kaplan says, courtrooms will be the battleground for the district of receipt vs. district of origin issue. Different jurisdictions will probably come up with different solutions to the problem, making it difficult for users and system operators to know what is and isn't legal.

"Community standards are going to be outstripped by the growth of the Information Superhighway," he says. "I don't think it will get simpler for BBS operators in the short term."

Eventually, Kaplan says, the various sides will probably end up in a fight over a true national standard for obscenity. A national standard set down in law would simplify things, he says, but there is little consensus on what should be on such a list.

Tachibana says he thinks the country is too large and varied for a national obscenity standard.

"Unless there's a serious move to the right, I don't see how there can be a national standard for obscenity," Tachibana says. "The communities of the U.S. are far too diverse."

However, he says, the controversy will only gain force as more Americans hook up to the Internet. The issue probably won't be resolved for another 10 years at least, Tachibana says, and it is hard to predict what the future mood of the country will be.

"We'll see what the Congress looks like at the time when it goes down, and the Supreme Court," he says, but he cautions against any sort of censorship.

"We have allowed the government to be our mothers and fathers, and that's not right," Tachibana says. "That's not how a democracy is run."

In whatever manner the American democracy decides to run itself, it may not make much of a difference to computer pornography. BBSes are one thing, but no matter what regulations Congress and the courts might iron out, America does not control the Internet.

Global Problem

In fact, no one controls the Internet. Wiping out obscenity on the 'Net isn't like cleaning up a town. If you chased out all the pornographers within a 100-mile radius of a certain city, it would be difficult to find

pornography in that area. But if you chased all obscene material out of U.S. Internet sites, American citizens could still connect with computers in other countries that didn't abide by such strict standards. Cultural variances and divergent agendas lead to foreign nations where the U.S. porn seeker could still expect to find obscenity.

"It's out there, and even if you could get an international agreement, international enforcement is difficult," Tachibana says. "It just gets way too impossible."

Even Kaplan agrees that international regulation would not come easily.

"It will be very difficult," he says. "It's not the ideal situation."

Tachibana suggests a better solution to the problem would be special software that parents could use to keep pornography away from their children. In the same way parents can ask their phone companies to block off 900-number access to prevent unauthorized use of pornographic phone services, parents could use "filter" programs to block certain types of texts and image files from flooding into their kids' computers. A practical filter program would not be an easy thing to develop, but Tachibana says the only real obstacle is a lack of funding for such projects. Groups who feel strongly against pornography should use their energies toward this goal, he says.

"Rather than spend money lobbying for unworkable laws," Tachibana says, "they should pay programmers to write the things."

Kaplan isn't as optimistic about software gateways.

"Technical fixes seldom will do the job for someone determined to circumvent it," he says.

Old Solutions

In the case of computer porn, however, legal fixes wouldn't fare much better. Never has it been harder for authorities to ban certain types of information than it is today. Anyone with an Internet account can distribute files to the whole world—files users can then download in the privacy of their homes, away from the eyes of the law.

In an environment where all the arguing over obscenity—right or wrong, harmful or not—may be moot, parents hold the ultimate responsibility to protect their children. Americans can't count on the government to clean up the Internet, regardless of whatever consensus might be reached on the issue. The ability to control the global network is out of Congress' hands.

Tachibana says the only solution to the computer pornography problem is the same as the solution to many other problems of youth: Parents must pay attention to what their children are doing. If kids find pornography, parents should talk to them about it. Pornography is like hate speech, Tachibana says. More speech is the only cure.

"I think the focus should be on how to make children able to understand what's bad and what's good," he says. "An image is not going to hurt a child. It's how that image is interpreted that's going to hurt the child."

Unfortunately, no one knows exactly how a young child—even one with a well-developed sense of right and wrong—interprets the graphic image of a woman being tortured. ●

by Alan Phelps

Beware Of Strangers

More disturbing than any pornographic computer image are the images in parents' minds of unknown pedophiles searching cyberspace for new victims.

Recent news stories—such as one in which a mother spotted her 14-year-old daughter about to leave for a motel with a middle-aged man, and another where a New Hampshire boy was sexually assaulted after meeting with men he met through his computer—have served only to heighten fears.

"Computers have become the medium of choice for pedophiles," says Deen Kaplan, vice president of public policy for the National Coalition for the Protection of Children and Families.

Parents have always needed to protect their children outside the home. Now the Internet, and especially commercial online services, make it easy for sick minds to find friendly children through computers. Places like America Online, CompuServe, and Prodigy all have chat rooms for kids and teens. But just because a room is reserved for children doesn't mean everyone inside is under age 18.

On computer networks, you only know people by their screen names and what they want you to know. A pedophile could pose as a youngster to gain the trust of kids. Or he might not even need to lie about his age—children are generally willing to chat with new friends, and they find computers fun to use.

Pedophiles are a frustrating problem for law-enforcement officials. Unless someone has a prior history of stalking kids, it is difficult to prove wrongdoing until it is too late—when some type of assault or threat has already occurred.

To prevent such tragedies from happening, parents may want to make clear a few commonsense rules before they let their kids venture out into cyberspace alone:

- Most commercial online services have parental control features that allow the adult account-holder to block chat room access from younger members of the family. Parents should learn about such features and consider using them.
- Tell your children to never give out last names, addresses, or phone numbers over the computer.
- Be wary of any computer friends who want to meet your child in person. Find a way to make sure they are who they say they are.
- Never answer threatening or harassing messages. Report anyone suspicious to your online service.

The answer is not to cut your children off from networks entirely. The Internet and online services are useful tools for education, but in many ways they are like big cities with millions of inhabitants. Most of your online neighbors are decent people from whom children can learn a lot. But parents should remember that a tiny few are dangerous. Just as you wouldn't leave your child in a strange place to converse for hours on end with strangers, you shouldn't turn your children loose online without supervision. ●

Putting Porn In Its Place?

Senator's Bill Targets Online Porn

Within a few minutes of logging on to the Internet, anyone with World Wide Web software can find and log in to the *Playboy* magazine home page to view a nude photo of this month's Playmate. In a few more minutes, they can track down *Libido*, an online magazine, and view photos of women undressing, kissing, and fondling one another. They can search other online sites to read about group sex, sex with objects, even sex with animals. With no parental supervision and plenty of time to kill, enterprising children can go online and find increasingly hard core material dealing with any imaginable topic.

When it comes to the Internet, Big Brother is definitely NOT watching.

Perhaps it's time he did, says Sen. J. James Exon. For the second year in a row, the Nebraska Democrat is pushing legislation to prevent children from straying into the dark alleys of the Information Superhighway. Exon's Electronic Decency Act would prohibit anyone from distributing "obscene, lewd, lascivious, filthy, or indecent" material via **bulletin board systems (BBSes)** or the Internet. Violators would face up to two years in prison and a $100,000 fine.

The Electronic Frontier Foundation, a Washington D.C.,-based group that deals with online issues, opposes the Electronic Decency Act and says it violates First Amendment guarantees to freedom of speech. Shari Steele, the EFF's director of legal services, says the bill's language is vague, especially the reference to indecent speech. Moreover, Steele says, it's an excessive reaction to an overblown problem.

"I think the whole idea of children getting access to obscenity is one of those ideas that you touch and everybody goes, 'Oh, this is terrible,'" Steele says. "I'm on the Internet every day, and I don't see obscenity. I know I could find it if I looked for it without too much trouble. It's nothing you come upon if you're not looking for it. It's not so prevalent out there that we need to be protecting our children in ways that are going to be very restrictive on adults."

Exon believes the problem is serious enough to justify legislation. He cites one opponent of the bill who says that 98% of the pornography available online is no worse than the material available at any adult bookstore. "I think that comment sums up very well the untenable position that many of the naysayers [of my bill] are placing themselves in," Exon says.

Mike Geraghty, a New Jersey State Police trooper who investigates online crimes, says it's relatively easy to go online and find conventional pornography. It's more difficult, however, to find child porn online.

Geraghty, a self-described conservative who says he wouldn't want his 6- and 8-year-old children to access online porn, concedes that the Electronic Decency Act raises valid free-speech issues.

Self-Selecting Communities

The EFF contends that the debate over the Electronic Decency Act is primarily a debate about community standards. The Supreme Court has ruled that obscenity must be defined by contemporary community standards: what people in a small, West Virginia town find to be obscene may be perfectly acceptable in, say, Las Vegas, New York, or Los Angeles.

The EFF believes the Electronic Decency Act would establish a single, nationwide community standard, a kind of moral lowest common denominator so that information and images posted on a BBS in Las Vegas would not offend the sensibilities of rural West Virginians.

Exon says his bill simply extends to online information the same standards that apply to telephone conversations and magazines sent through the mail. But unlike magazine publishers, who know where their magazines are sold and mailed, people who place information and images online often have no idea of who will access it and where it will end up. Even if people who placed material online could somehow block access from certain communities, the EFF argues, it would require them to keep up on the contemporary standards of thousands of local communities scattered from Quonset, Maine to Honolulu, Hawaii.

The EFF argues that materials on BBSes and Internet servers shouldn't be judged using the

standards of any physical community because Internet and BBS users establish their own online communities. With the exception of material like child pornography and libel, Steele says, these self-selecting communities have a constitutionally protected right to set their own standards.

"If it's not going out into the community, and people know what they're getting before they get it . . . then they should be able to choose whatever kind of material they get without the state regulating whether they get it or don't get it," Steele says.

The concept of self-selecting communities that are exempt from larger societal standards is not without precedent. It may be obscene to walk naked down the street of any American community, for example, but it's perfectly acceptable to walk naked through a nudist camp. Of course, the nudist camp isn't located in your house, and it's not something you could stumble into while trying to find information for a book report.

The idea that a child could join a self-selecting online community without parental control disturbs Exon. "I guess what they're saying is that if they have an 8-, 9-, 10-, or 12-year-old child who can find their way into these dark alleys, then that's the price society has to pay for the great benefits of the Internet," he says. "I happen to feel society should stand up early on and take a stand on this."

The Big Chill

Giving the government authority to regulate online obscenity is tantamount to giving it a license to intercept E-mail, Steele says. Imagine giving federal agents the right to intercept online traffic and read E-mail the way that postal inspectors open plain brown packages to search for dirty magazines.

"The bill doesn't make a distinction between consensual and nonconsensual speech," she says. "Even if it's a consensual message—if I want to send a private electronic mail message to my husband that contains private, dirty nothings—that's a criminal violation of this bill."

Exon denies that is the intent of his bill. "If that is happening on E-mail where no one else can tap into it, then I would see nothing wrong with that," he says. "[It's not] the intent of my legislation to put anyone in jail for doing that."

Besides, Exon points out, the government will never learn of a lewd or obscene E-mail unless the recipient complains about it.

Exon's bill does raise some serious civil liberty questions. For example, people who placed potentially obscene material online could defend themselves by saying they attempted to prohibit access to children or to adults who might find it offensive. However, it would be an "affirmative defense" they would have to prove to a jury or judge after they had been dragged into court.

Overzealous prosecutors could use the law to drag defendants, especially small BBS operators with limited financial resources, into court and bankrupt them. "It would be a death decree [to the BBS] if their only legal recourse was to defend themselves after they've already been brought up on charges," Steele says.

Flaws In The Ointment

Even if Exon's bill passes, it may have little impact on the online porn trade. Much of the pornography that the bill is designed to stop, especially child pornography, is transmitted via private E-mail, Geraghty says. Pornographers encrypt child porn images using special encryption software, making it nearly impossible for law enforcement to open and view the files even if they managed to intercept them.

Some pornographers skirt the law by using the Internet's international connections, Geraghty says. They transmit images to Denmark, where obscenity laws are especially lax, and store them on Internet servers there. Porn consumers then use the Internet to download the image files from the Danish connection.

Sen. J. James Exon, D-Neb., leads the legislative campaign against online pornography.

Steele suggests that the only real solution is to encourage parents to supervise their children more closely. "We are in favor of . . . putting control in the hands of the parent, where it should be, rather than in the hands of the state," she says.

Rather than a government ban on obscenity, the EFF supports the use of special "filters" that enable parents to lock out objectionable sections of the Internet, online information services, and BBSes. The three largest online information services—CompuServe, America Online, and Prodigy—all use filters to block selected forums and file libraries.

In many cases, though, the only things that are actually blocked out by the services are directories that give addresses to these sites. Simply blocking the directories to these locations does little good; in five minutes, via trial and error, you still can access plenty of adult material.

Some BBS operators require proof of age, such as a photocopy of a driver's license, before letting new users log on, Geraghty says. But many BBSes with "adult" material don't, he says.

As a parent, Geraghty supervises his children when they go online. When they get older, he intends to let them explore on their own. "Just like the rest of the world, the Internet has some great things for kids," he says. "Ninety-nine percent of what they explore will be in the forums you want them to be in."

But Geraghty believes parents need the help of laws and law enforcement to protect children from that dangerous 1%. Just as parents rely on local laws to prevent adult bookstores from selling pornography to their children, they should be able to rely on laws to prevent adult BBSes from delivering pornography to their children.

Exon is not so naive as to believe his bill will halt the pornography traffic or that it will altogether keep porn out of the hands of children. Rather, he believes it will deter online porn merchants from pandering to children. He also hopes it will encourage parents, BBS operators, and online services to work together to protect children.

"We have already scored a major victory if nothing more comes of the Decency Act because we have alerted the people of the United States to what is going on," he says. ●

by J.W. Huttig

Consolidated Computing

Solutions For Chaotic Cables & Switches

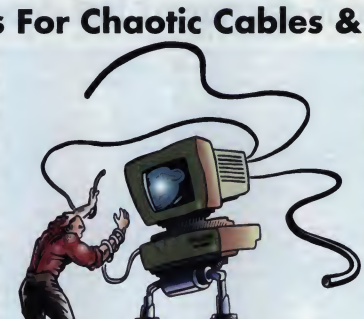
Elegant simplicity is sometimes hard to find around computers. Turning on a PC can make you feel like an astronaut gearing up for a flight by the time you flip switches to turn on the PC, monitor, printer, and any other peripherals. Furthermore, the computer system usually exists in a kudzu-like tangle of power cords, printer cables, and network cables draped over and around the entire desktop.

Computer professionals have devised creative ways of organizing their cables. Some have resorted to the decidedly nontechnical trick of purchasing wire tie wraps from the local hardware store and using a handful of wraps to tie up their cables. While this is an effective solution, it's neither the most attractive nor the most practical. If, for example, monitor and printer cables are wrapped with monitor and computer power cords, installation of a new monitor can prove tedious. Each tie wrap must be cut, the old monitor cords pulled out, and the new cords slipped in. Then the tie wraps, bought last year, must be located and twisted around the cables. The tie-wrap setup is a bit inefficient and leaves the string of cables looking like they're secured in the same manner as a loaf of bread.

Fortunately, there are sleeker solutions to a preponderance of switches and cables.

Power Management

Several companies, such as Tripp Lite, American Power Conversion, and Kensington, have combined limited cable management with surge protection in devices that look like small pizza boxes and fit neatly between a monitor and most desktop computers. The boxes let you plug all of the system's power cords into one peripheral and control them with one switch.



Once the power cords are connected to the surge protector, you can turn each peripheral on and off, along with the entire system, from your desk. Kensington's Masterpiece Home Office and Tripp Lite's Command Console have six and five rocker switches, respectively, on the front of the units. The main power switch controls power for the entire unit; the other switches carry labels such as Monitor, Printer, Aux 1, and Aux 2. Users plug the computer power cord and each of the peripherals into the Masterpiece Home Office or the Command Console, then plug the device into a power source. The Masterpiece Home Office also features a continuous power outlet in case you need to connect a device such as an answering machine to the PC.

To turn on the printer, for example, a user can flip the printer switch on the Masterpiece Home Office or the Command Console, and the printer is on. (This concept works properly only if the power switch on the printer and other peripherals is always left in the "on" position.)

While the Kensington and Tripp Lite consoles confine the power-up process to a one-switch proposition and eliminate the hassle of reaching behind peripherals to find the switches, they leave a problem unresolved. Neither the Masterpiece Home Office nor the Command Console offer effective solutions for what to do with those tangled cords; their answer is to leave them hanging out the back of the unit. Even if your multiple switch headaches may be over, the tangled combination of those cords and cables still presents a problem.

An APC product called the Power-Manager addresses cable clutter. The PowerManager, which is popular with many system administrators, has a cover that allows access to the interior of the unit. Instead of plugging the power cords into the back of the unit, as you would with the Kensington and Tripp Lite units, you plug the power cords inside the PowerManager, close to the front of the unit. The PowerManager case has enough room inside to store excess power cord length, which is a more elegant solution than the tie wraps. The main issue to consider is that you leave a suitable length of power cord outside the PowerManager so that it reaches the peripheral device.

Cheap & Easy

Even if power cords are tucked away in a console, you may still face a tangle of printer, monitor, network, and SCSI cables. There is a myriad of surprisingly simple commercial solutions to choose from.

Kraft and other companies offer **convoluted tubing**, a length of flexible, plastic tubing, similar to the old-fashioned attachable hoses used by vacuum cleaners, that is split lengthwise down the center of the tube. Many companies that deal

with numerous wires turn to convoluted tubing.

To use the tubing, you open the tube via the split, insert the cables, and reclose the tube. The split closes around the cables and, instead of having several unsightly cables cluttering your home or office, you now have your chosen color of flexible tubing hiding the serpentine mess. This approach is superior to the tie wraps discussed earlier because you can remove or add cables at any time without cutting and retying the wraps. Furthermore, cables are often damaged when crimped by wraps or nicked as the wraps are cut during removal

Kraft no longer manufactures its Cordex Power Cable Management System, but a company spokesman said the package may still be available in some retail stores. Kraft's package and others usually offer a choice of black or white tubing, and each kit comes with identification tags and snap-lock cord clips that let you anchor the convoluted tubing to a wall or a desk.

San Francisco's Rip-Tie Company had such unexpected success with its CableWraps that it expanded its product line to include the new CableCatch fasteners. The most popular CableWraps are 1 x 6-inch nylon straps secured with Velcro fasteners. The CableWraps won't damage cords and can be quickly removed and reattached when adding or removing cables from the bundle. Rip-Tie customers have used the wraps for a variety of tasks, including color tagging the legs of live ostriches at a Texas bird ranch. CableCatches are similar to CableWraps except for the addition of a peel-away adhesive backing that allows them to be mounted to walls or desks. A series of CableCatches mounted to a desk creates a convenient way to keep cables off the floor.

APC's PowerManager conceals excess cable length in the unit.

Several other simple ideas are available in most office supply catalogs. Plastic cable ties, sometimes called "zip-ties," can be used like the wire tie wraps or Velcro wraps mentioned earlier. The plastic wraps are pulled tight around cables, and the excess tie length is cut off. A hollow rectangular box called the Cable Manager is covered on top by two plastic flaps and is mounted horizontally to the back of a desk. The box conceals cables and provides a channel for running them across the back of a desk and toward an outlet. The Cable Duck can be mounted vertically to a desk with adhesive tape and used to channel cables toward an outlet. The Cable Manager and Cable Duck are available directly from Peripherals Distributing. Heavy Cable Control Clips can be attached to walls or desks, but they may only hold one cable at a time. The clips and Cable Hold-Up Straps, which are similar to CableCatches, are available from Velcro USA. Products as familiar as duct tape also may solve your problems by securing cables to the floor when they must run across a walkway.

While we wait for an entrepreneur to perfect wireless computer systems, cables will remain a necessary evil. Unless you savor the experiences of tripping over cables and fighting tangles when it's time to move a peripheral, it makes sense to purchase some sort of cable management system. Shop around, and you'll find a variety of options, from switch consoles to cable-taming Velcro. We won't go so far as to say they'll make your system attractive, but they will make it manageable. ●

by Trevor Meers and Stuart Sandler

Rip-Tie's CableWraps are a simple way to keep cords out of the way.

For More Information:

Command Console
$125
Tripp Lite Manufacturing
(312) 755-5401

PowerManager
$84.95
American Power Conversion
(800) 800-4APC (4272)

Masterpiece Home Office
$70
Kensington
(800) 535-4242
(415) 572-2700

CableWraps
$24 for 10
CableCatches
$13.95 for five
The Rip-Tie Company
(800) 348-7600

Cable Manager
$54.75
Cable Duck
$10.95
Peripherals Distributing
(800) 536-2365

Cable Control Clips
$2.99 for six
Cable Hold-Up Straps
$2.99 for six
Velcro USA
(800) 950-3233

SPECIAL ISSUES!

Guides Guaranteed To Save You Time & Money

The ALL NEW Guide To Windows will be available at many of the following newsstands AFTER JULY 6

- B. Dalton
- Borders
- Waldenbooks
- Staples
- Bookstar
- CompUSA
- Crown Books
- Safeway
- Publix
- Walgreens
- Kash N' Karry
- Lucky's
- Sav-On
- Books-A-Million
- Payless
- Barnes & Noble
- Albertson's (Wash. only)
- Fry's Electronics
- Alpha Beta
- Homeland
- Encore Books
- Giant
- Rite Aid
- C.V.S.
- H.E.B. Food
- Stop N' Shop
- Shaw's
- Bookstop
- Eckerd's
- Big Bear
- Wal-Mart
- Ralph's
- Kroger
- Bookland
- Marsh

Check your local newsstands

This ALL NEW Guide To Windows will continue where the first issue left off. It contains even more troubleshooting tips and will unlock the secrets of Windows, including a special section on Windows & Networking. If you enjoyed the first Guide, this is a must-have issue.

Available on newsstands July 6!

Your #1 Windows Resource. This special issue covers every aspect of the Windows environment. Become more productive with your PC by ordering this invaluable reference guide that you will turn to again and again.

Available by mail only!

Everything you need to know about online services and the Internet. From downloading FREE software to reviews of online hardware and software, this guide will answer all of your questions.

Available by mail only!

Call

1-800-367-7333

and order today. Have your credit card ready.

Number of copies:

___ *Guide To Windows II—$7.95**
___ *Guide To Windows—$7.95**
___ *Guide To Going Online—$7.95**

___ **Bonus Offer!**
Save $5.85 by ordering all three—$18*

* Shipping and handling included

Name: _____

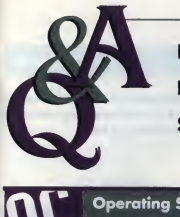
Company Name: _____

Phone: _____ ☐ Home ☐ Business

Address: _____

City: _____ State: _____ ZIP: _____

To order by mail, send check or money order payable to *PC Novice*.
Mail to: *PC Novice Guide Series*, P.O. Box 82511, Lincoln, NE 68501. Please allow 10 days for delivery.



Need some help with your hardware or software?

Looking for simple explanations on technical subjects?

Send us your questions!

Operating Systems

Q: *I have an AST 386 PC with DOS 5.0. I also have on hand seven "update disks" for DOS 6.0. I assume that this update disk set is only a part of the full DOS 6.0. What is the effect of the upgrade? Does 6.0 "override" 5.0 or simply add to it? And, bottom line, will I gain enough from the upgrade for it to be worth installing?*

A: Don't be fooled by the word "update" on your disks. If there are seven disks, you can bet your floppy that's a complete copy of DOS 6.0. What makes it an "update" rather than a "full" version is only the fact that it will "look" on your hard disk drive for an earlier version of DOS and may refuse to install if you don't have a previous DOS there. Once it recognizes the presence of an older DOS version, it will install itself in a new directory and put the older DOS aside. The older DOS stays there forever, or at least until you decide you're sure you don't want to use it again. To clear it from your hard drive, you can run the DELOLDOS command (*Delete Old DOS*). Most folks forget to run DELOLDOS and leave the older DOS occupying megabytes of valuable hard drive space. On any computer that had its DOS upgraded, try typing **deloldos** at the DOS prompt and press ENTER. It can't hurt to do it, unless you have a special reason to preserve your ability to revert to the older version, and you may be able to recover disk space.

DOS 6.0 was a significant jump from DOS 5.0, which itself is a decent version. DOS 6.0 added a disk compressor, which can double your disk space; a decent backup program; an antivirus program; built-in help that is far better than that in DOS 5.0; and many other features. On the down side: it will, if you let it install all its features, occupy about 6MB of disk space versus about 3MB for DOS 5.0. The DoubleSpace disk compressor and the MemMaker memory optimizer with 6.0 were somewhat unreliable; that was fixed in MS-DOS 6.20 and 6.22, and more improvements were added. If you're going to the trouble of upgrading, we'd suggest you get yourself a cheap ($10 to $12) upgrade from 6.0 to 6.22 , which is called the "step-up kit." You also might consider getting IBM's PC-DOS 7.0. It has all the features of MS-DOS 6.22, some that MS-DOS 6.0 lacks, and even better built-in help.

Q: *One supposed "plus" of Windows For Workgroups (WFW) over regular Windows is turning on its optional 32-Bit-File-Access (32BFA) to double disk performance. But when I activate 32BFA, my system actually runs slower! The time it takes for Windows to open from the DOS prompt is markedly longer. I have a Packard Bell 486-25 multimedia computer with 8MB of RAM and a recent version of Stacker, the disk compression utility. The folks at Packard Bell haven't been too helpful. They basically said, "Well, then don't run 32BFA." Do you have any suggestions about what's going on and what to do about it?*

A: Enabling 32BFA can slow you down in a couple of situations. One would be if 32BFA didn't *really* get activated but did turn down your SmartDrive cache while trying to start itself. We assume in your case you actually got 32BFA running, which you can confirm by going into Control Panel's Enhanced dialog box and looking at your virtual memory settings.

Another reason for the slowness might be if your Vcache (the disk cache utility that 32BFA uses instead of SmartDrive) size is set too large. WFW may be starving for random-access memory (RAM) after Vcache is enabled. This is even more likely if you're running Vcache (32BFA) and *also* running the older SmartDrive; together they may be taking too much memory, thereby slowing WFW down. If so, make sure that the memory allocated to both caches doesn't exceed 30% of your total memory. In your case, that means typing the following line into your Autoexec.bat file to set the RAM that SmartDrive uses to 128 kilobytes (KB):

```
c:\windows\smartdrv.exe 1024 128
```

The 1024 becomes your cache size *until* Windows starts; 128KB will be your cache size after Windows starts. Then, open the Control Panel group in Windows, click on the Enhanced icon, and in the Virtual Memory dialog box, set your Vcache size to about 1024. Another good trick to save memory when running WFW is to start it with **win/n** instead of **win**. This starts WFW in non-network mode, which means you can't connect to the other computers on the network. Since most folks running WFW aren't actually on networks, this is "free" memory and speed. If you still see a loss of performance, we'd agree with Packard Bell to forget 32BFA for now (there are occasionally some other unpleasant side effects of it, anyway).

If you're really desperate for more speed, you can try setting SmartDrive to do "delayed writes" (see Q&A in the April 1995 *PC Novice*) by typing:

```
c:\dos\smartdrv.exe c+ 1024
```

in your Autoexec.bat file. The "+" turns on delayed writes. Delayed writes will sometimes remarkably speed up your disk, but, as we said in April, they will slightly increase your risk of accidental disk data disasters. We recommend delayed writes only if you have nothing important on your hard disk, or keep ***complete and current*** backups.

Operating Systems

Q: *I have an older computer that I suspect is either a very old XT 8088 type,or maybe a not-quite-as-old 286 type. How can I tell which?*

A: Usually during boot up, if a computer is a 286 or higher, it will briefly display an on-screen message like "— 286 BIOS version —." Also, if it "counts" or checks RAM during startup and the count reaches higher than 640, it's probably a 286 or higher. Any common diagnostic utilities also would unmask its identity: If you have *WordPerfect for DOS*, try typing **wpinfo** and pressing ENTER. We mention that because the WPINFO diagnostic is often sitting around on old computers. As a last resort, open the case while the computer is unplugged and look for tiny letters on chips saying "80286."

Q: *I was given a used computer with both 3-1/2" and 5-1/4" floppy disk drives. All the hardware appears to be hooked up, but I can't get the B: drive (3-1/2") to work. Could a software command for the second drive (in Autoexec.bat or Config.sys) have been deleted by the previous owner? I think my computer is an IBM Personal Computer XT.*

A: If the computer is *newer* than an XT 8088 type (see previous question), you probably need to tell its CMOS setup that it has a B: drive (for more information, see "Changing Your Computer's Battery" in the March 1995 *PC Novice*).

If it's an ancient XT 8088 type, then your guess is probably correct. Since 3-1/2" floppy diskettes didn't exist when XTs were made, that B: drive was probably added later. To make the B: drive run, *two* things (beside installing it and plugging the right cables to it) have to happen. First, if the computer originally had only one floppy disk drive, some tiny DIP switches on the motherboard have to be repositioned to "tell" the computer it now has two floppy disk drives. This isn't hard or dangerous as long as the power is off, and you mark the original positions so you can "fall back" to them if you mess them up. But without making drawings for you, we can't tell you exactly which switches to set. Phone a friendly hardware tech or IBM (800/426-3333), and with the case open, have them walk you through these hardware settings.

Unfortunately, that's not enough. Most computers made before about 1988, even 286s, didn't understand such a thing as a 720KB floppy (such as your 3-1/2" disk drive might be), let alone the even newer 1440KB drives. If you merely set your DIP switches correctly, when you try to use the 3-1/2" B: drive, its light will come on and it'll make noise, but you'll get some kind of error message. Your computer very likely also needs a software driver to "explain" to DOS how to read this newfangled floppy disk drive. So-called drivers for this task come with DOS 3.20 and newer. The driver file is called Driver.sys. Copy it from your DOS directory to your root directory (C:\) by typing:

```
copy c:\dos\driver.sys c:\
```

at the DOS prompt and press ENTER. Then to activate a 720KB drive as the B: drive to your system, add this line to your Config.sys file:

```
device=driver.sys /d:1 /f:2
```

If you're using a 1.44MB floppy diskette, type:

```
device=driver.sys /d:1 /f:7
```

instead. The "f:" tells what *type* of floppy; the "d:" tells what *position* (the A: drive is "0"; the B: drive is "1"). If you also want to use that drive to copy 3-1/2" disks, you need *two* driver lines, like this:

```
device=driver.sys /d:1 /f:2
device=driver.sys /d:1 /f:2
```

This would set up "B:" as one letter for the new drive and "D:" as an alternate "alias" for the same drive (rest assured that even though these lines are identical, they are setting up the drives). Then you could do commands such as **diskcopy b: d:** to copy between two disks swapped in and out of the 3-1/2" drive.

Two caveats: (1) You don't have to do this if you have a 286 or higher PC that already lists in its Setup screens a 720KB or 1.44MB 3-1/2" floppy diskette drive as a legal choice; (2) Some special after-market controller cards sold for old XTs and 286s made their own provisions for activating newer floppy disk drives without resorting to using Driver.sys.

Q: *In the March 1995 issue ("Changing Your Computer's Battery"), you discussed the importance of printing out and saving the information presently in one's CMOS setup screens, to have available for restoring it in case the battery that preserves that information dies. I followed your advice on that (and on making a "boot" disk). My question is: If my computer won't function without that information—and the information disappears if the battery dies—how would I get the computer started to put the information back in?*

A: When setup information disappears—particularly if the Disk Type gets messed up—for all *practical* purposes your computer is useless because it can't access its hard disk, which has all of your programs and data; you can't even get DOS or Windows started. However, if you read the article again, you'll see that even with missing setup information the computer will still start up *enough* to let you—with the right keystrokes or setup diskette—get inside its setup routines; once inside them, you correct the information, then restart the computer.

Utilities

Q: *I recently installed QEMM 7.5 (a memory management program from QuarterDeck). Its whole purpose is to increase usable memory, and it appears to work well, increasing my free DOS memory to 632KB. But a statement pops up at the end of my startup saying "Cannot load with either option selected." What does this mean, and how do I get rid of this message? I have a 486DCL 33, 8MB RAM, and a 120MB disk. I'm running DOS 6.22 and Windows 3.11. I installed Stacker 4.0 with no apparent problems.*

A: Your problem doesn't sound directly related to QEMM. What's the name of the TSR/driver that is reporting this error? A good way to find out is to press F8 when you get the "Starting MS-DOS" message on startup. This lets you progress through your startup process one line at a time. Answer "Y" to all the lines until you see the error message. Then

Utilities

you know what driver to suspect and investigate further. One other thing that might help is to add an /e parameter at the end of your MSCDEX line in your Autoexec.bat file; the /e tells this CD-ROM driver to use expanded memory, if available. We're not sure this is the problem driver, but at the very worst, adding /e allows QEMM's Optimize routine to make better use of RAM.

Multimedia

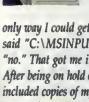
Q: *Would you help settle an argument about CD-ROMs? Some programs that come on CD-ROMs (Corel Draw, for instance) offer options during install. I can tell it to install all of itself onto my hard drive or tell it to just install its startup files and keep most of itself on its CD-ROM. Which is best?*

A: The obvious advantage of installing it all on the hard disk is that you don't have to put the Corel CD into your CD-ROM drive every time you start Corel (or even use fonts that came with it). The obvious advantage of leaving most of it on the CD is that it saves as much as 20MB of hard disk space.

Speed is an issue: CD-ROM drives are *much* slower than conventional hard disks. Even double- ("2x") and quad-speed ("4x") CD-ROM drives are slow. Probably the most important measure of disk performance is the sustained data-throughput rate (the measure of how many kilobytes of data the computer can suck into itself off the disk surface in one second). Consider this table of data throughput speeds:

	CD-ROMs	HARD DRIVES
Slow	150KB per sec. (older units)	600KB per sec.
Mid-range	300KB per sec. (2x units)	1500KB per sec.
Top-line, fastest	600KB per sec. (4x units)	4000KB per sec.

In practice, CD-ROM drives aren't *quite* as sluggish as these numbers suggest, particularly if you have your SmartDrive disk cache set up to help your CD-ROM (see the April 1995 Q&A); it will probably mean that starting up Corel might take 50 seconds from the CD but only 20 seconds from the hard drive. CDs have many virtues, but speed isn't one of them.



General Computer Hardware

Q: *I installed Home MS mouse in November. After I installed it, instead of Windows coming up right after the Windows logo, I'd get kicked out to a DOS prompt. The only way I could get back in was to walk thru Autoexec.bat line by line until it said "C:\MSINPUT\MOUSE\MOUSE.EXE/Q (Y/N)." I typed "N" for "no." That got me into Windows but wouldn't let me use my mouse in DOS. After being on hold on the MS support line for 15 minutes, I wrote a letter and included copies of my files. Microsoft sent me a letter saying they don't do tech support by mail. So I'm stuck.*

A: That line that's giving you trouble loads your mouse driver into DOS memory for the use of DOS programs (games, etc.). As you saw, Windows doesn't need that mouse driver at all. If you only use your mouse in Windows, deactivate the offending line by typing **rem** in front of it. Even if you do need the mouse in DOS, either before or after starting Windows, you could deactivate that line and create a batch file called Gomouse.bat just for that driver. Type these commands, ending each line by pressing ENTER:

```
cd \
edit gomouse.bat
```

In Gomouse.bat, type the single mouse driver line just as it was in the Autoexec.bat file. Now, press ALT-F, then *S*, to save your batch file. To exit the file, press ALT-F again, then *X*. Then, just before running a DOS program (whether in a DOS "window" in Windows or before starting Windows), type **gomouse** and press ENTER.

If you prefer a real fix to a work-around, there is another method. The Mouse.exe driver tries to load itself in "upper memory," which sometimes causes conflicts with certain computers. You can try adding **x=c600-c7ff** to the EMM386.EXE command in your Config.sys file. It would then read something like:

```
DEVICE=C:\WINDOWS\EMM386.EXE noEMS x=C600-C7FF.
```

This tells the computer to refuse to let the mouse (or any driver) use a certain part of memory.

If that doesn't help, try adding the /e parameter after the *Q* on your Mouse.exe line. This will force the driver to stay completely out of high memory. Or, try using the Mouse.com driver instead of Mouse.exe. Mouse.com, which is usually found in your Windows directory, is a mouse driver that came with Windows (Mouse.exe came with your mouse). If you don't have Mouse.com in your DOS or Windows directory, use the following command to expand the file off your Windows Setup Disk 4:

```
expand a:mouse.co_ c:\windows\mouse.com
```

This decompresses and copies the file into your Windows directory. Then, after typing the REM command in front of the offending line as suggested above, add the line:

```
c:\windows\mouse.com
```

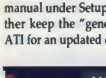
to your Autoexec.bat. Remember to press ALT-F, then *S* to save your changes.

Printers

Q: *When my new DeskJet 560C prints in text mode, lines are occasionally incomplete or missing. I checked my cartridge, and it appears OK. Hewlett-Packard tech support told me that this is a result of a "memory conflict problem" with the ATI Ultra Pro Mach 32 video card that came with my Gateway 486DX/33. What can I do to correct it? Am I reduced to either buying a new printer or a new graphics card? And if I did get a new graphics card, what's to say it wouldn't have a memory conflict?*

Printers

A: The special "video drivers" that video card makers usually supply for their cards are designed to maximize the speed and fine features of their card. Unfortunately, it's not unusual for the early versions of those drivers to cause problems. Fortunately, Windows comes with its own video drivers that, while they're not always the fastest or slickest, will work with virtually all video cards and won't cause memory conflicts. These "standard" video drivers are called VGA or SVGA. Try setting your video driver to the plain vanilla VGA or SVGA bundled with Windows (see your Windows manual under Setup or Video). If doing that solves the problem, either keep the "generic" Windows drivers or contact Gateway or ATI for an updated driver.



Word Processing

Q: *I run WordPerfect for Windows 5.2. How do I program a macro to prompt (warn) a user who attempts to close a document window while a macro is still active?*

A: According to the macro experts at WordPerfect, there's no way to do this directly. What you can do is to put up a "please wait" message while the macro is running. There are a few examples of this in the shipping macros.

Q: *In WordPerfect for Windows, the Template "cal_side" or "cal_up" won't open. I get the message "Undefined Variable `LEAP' has been referenced. Check Macro Line 17." It worked perfectly on January 31, 1995 and will work if I change my system date to any date not in February 1995. Why is this, and how can I fix it?*

A: This has to do with the template not knowing about leap year. You can fix this by adding the command

```
CALL(FirstDay@)
```

directly before the SWITCH statement on line 11 in the CALFIL template macro for WordPerfect for Windows 6.0. For WordPerfect for Windows 5.2, add the command before the CASE CALL statement on line 11 of the EDCALNDR.WCM macro. This problem was corrected with the April 20, 1994 (6.0a) release of WordPerfect; you could just order the update from WordPerfect.

Q: *Every time I open or close Ami Pro 3.0, I get a message in a dialog box saying "ERROR 51:MACRO NULL.SMM not found." What's going on and what I can do about it?*

A: While in Ami Pro, press ALT-L, then *U*, then *E*, and press ENTER. That takes you through the Tools/UserSetup menu. There is a checkbox that, when marked, runs a macro called Null.smm when you exit Ami Pro.

Null.smm, when it exists, is a macro that does nothing. Don't ask us to explain why it was put it in there, but you can remove it or any reference to it safely. Somebody from Lotus explained the "reason" for it once. If we recall correctly, whether it was installed or not had to do with whether the WordPerfect SwitchKit and/or the tutorial was installed. But it sounded more like rationalization than reason.

Here's another way to remove any Ami Pro macro that starts automatically and bugs you. For example, you might have originally installed Ami Pro to start up its WordPerfect SwitchKit (which notices if someone is trying to use old *WordPerfect for DOS* commands and tells them what they need to do instead). To remove the SwitchKit in Ami Pro: click on Tools, then Macros, then Playback. Select the macro file _Autorun.smm and click OK. Some activity will be displayed on the lower left of the screen, and a dialog box will appear. Showing in the lower left of this box is a list of all the macros set to run when Ami Pro is started. In that box, highlight Switch.smm, and click Remove. The macro is still available, but it won't run automatically.

Q: *I run WordPerfect for Windows 5.2. I can set the default so that all pages after the first page will be numbered at top center (option 2) with three blank lines after the page number and with page numbering suppressed on the first page. The best I can do by altering my default setting in Setup is to have all page numbers at top center, but this requires me to manually input the three empty lines and to manually suppress the numbering on page 1. Is there a better way?*

A: You could create a macro that places the page number in a header and center it there with a few blank lines between it and the beginning of the text. First practice with a blank document to see how many hard carriage returns (HRTs) you need to enter for the text to begin where you want it to. Then you can create your macro. You'll need to get to a blank document screen again and turn on the Macro Definition command (CTRL-F10), repeating the keystrokes you just practiced so they can be recorded into the macro. When you're done with the header and have chosen the Suppress This Page Only (F7) option, return to the blank document screen and turn off Macro Definition. Then, any time you need this setup, just run the macro. Call it "Pagenum" or something that will help you remember what it is.

Another way to do what you want is to use the header feature instead of the page numbering feature. To create the header, press SHIFT-F8 for the Format menu, choose the Page option, then Header, Header A, and select Every Page. Once in the Header A editing screen, press SHIFT-F6 to center the page number, then press CTRL-B to enter the page numbering code (it will look like ^B in your document). Then press ENTER twice to add the first two blank lines. The third blank line is automatically added below the header by WordPerfect. You can suppress the number on the first page, but you now have to suppress Header A instead of page numbering. ●

Get straight answers to your technical questions. Ask PC Novice! Send your questions to: PC Novice Q&A, P.O. Box 85380, Lincoln, NE 68501. (Volume prohibits individual replies.)

GLOSSARY
Of Terms

Bit—The smallest unit of computer data. Each bit has a value of either 0 or 1 that tells whether an electronic pulse is "off" or "on," respectively.

BIOS—Basic Input/Output System. A set of routines that work with a computer system's hardware to support data transfers between the various elements of a system, such as the monitor or disk drives.

CD-ROM—Compact Disc, Read-Only Memory. A data storage medium that uses laser optics rather than magnetic means to read data. Information can be read from CD-ROMs but not recorded on them.

CISC—Complex Instruction Set Computing. A CISC microprocessor chip, such as Intel's 486, can recognize a large number of instructions. The more instructions a chip can handle, however, the slower its performance.

Client/Server Network—A computer network in which a large, powerful computer, called the server, handles the sharing and storage for other, less-powerful computers, called clients.

Expansion Cards—Add-on cards, or boards, that allow you to install new components on your computer, including modems or audio cards.

Internet—A noncommercial, self-governing network devoted mostly to communication and research with some 20 million users around the world. The Internet is not an online service and has no real central "hub." Rather, it is a collection of tens of thousands of networks, online services, and assorted single-user computers.

I/O Addresses—Input/Output Addresses. Each hardware device is assigned an I/O address, offering a way for the microprocessor to figure out where the device is located.

IRQ—Interrupt Request Lines. The wires that connect your microprocessor to hardware devices. IRQ lines allow the hardware devices to request their share of attention from the microprocessor. Each line has its own "address" in the computer's memory.

ISDN—Integrated Service Digital Network. A type of digital phone line that allows users to have a faster connection between PCs than a modem can provide.

Jumpers—A group of small metal pins with plastic blocks covering some of the pins. By changing the position of the blocks (which contain tiny electrical connectors), you can change the settings of a hardware device.

LAN—Local Area Network. A LAN connects computers and peripherals in a limited area, such as a building or office.

Mainframe—Large central computers with lots of memory, storage space, and fast microprocessors that are wired to dumb terminals, consisting of keyboards and monitors. These mainframes handle all of the processing and storage for the terminals.

Microprocessor—The computer chip containing all the central processing functions of a computer. It's also called a CPU, or Central Processing Unit. The microprocessor is often called the computer's "brain" because all instructions must be processed through it.

Modem—A device that allows a PC to communicate with other modem-equipped PCs over telephone lines.

Motherboard—The main circuit board of the computer to which all other components are connected or directly attached.

Mbps—Megabits per second. This form of measurement is used to determine the amount of data being transmitted per second on a network or modem. One megabit equals about one million bits.

Parallel Port—A port, usually with 25 holes, that is used by peripherals such as printers. Parallel ports are commonly referred to as LPT1 or LPT2.

Peer-To-Peer Network—A type of network in which all the computers connected, called peers, are more or less treated equally and do not require a server to process information.

RISC—Reduced Instruction Set Computing. A type of microprocessor chip that can process only a limited number of instructions. The computers that contain these chips are usually faster than those containing CISC chips.

Serial Port—A communications port, with either nine pins or 25 pins, that is used by devices such as mice and modems. Serial ports are commonly referred to as COM1, COM2, COM3, or COM4.

Superscalar—The technology used in the Pentium chip, which allows microprocessors to move information through two parallel pipelines instead of one. One part of each pair of instructions is sent to each pipeline.

Topology—The physical configuration of a network that determines how the computers are connected. Common configurations include the bus, star, and ring.

TSR—Terminate-And-Stay-Resident. This is a program running under MS-DOS that's designed to remain in memory even when it's not in use.

VESA—Video Electronics Standard Association. A standard for high-resolution video devices, such as monitors. Devices following this standard have a better chance of being compatible than those that do not.

WAN—Wide-Area Network. A group of computers in different geographical locations that are linked, generally via modem.

80x86—These computers are based on Intel's line of microprocessors and are commonly referred to by names such as the 386 or 486.

800 Reader Service

To request additional information on the following products and services advertised in *PC Novice*, call the number provided by the advertiser. When calling the manufacturer, please mention *PC Novice*.

Company Name	PhoneNumber	Page #
American Businesss Information American Yellow Pages, American White Pages - 1995 editions.	800-555-5666	34
Avery Dennison The Products Of Office Technology	800-732-8379 Ext. 944	IBC
Canon MultiPASS 1000	800-4321-HOP	7
CBSI Earn $4,000 Per Month From Your Home With A Computer!	800-343-8014 x2075	16
Computer City For The Store Nearest You—Call:	800-THE-CITY	45
Corel Stock Photo Library	800-555-6255	BC
Genius GeniusLan	800-456-7593	26
Jasmine Multimedia WildWest CD-ROM	818-780-3344	33
Maxell Super RD II Disk	800-533-2836	13
MultiWorld PhoneDisc	800-929-1092	9
Parsons Technology		
Princeton Graphics Lose The Excess And You Define Power	800-747-6249	IFC, 1
SoftDisk Publishing Try Our 3-Month Software Subscription	800-831-2694	31
SRW Computer Components Anti-Glare Screen	800-547-7766	73

IFC=Front Cover **IBC=Inside Back Cover** **BC=Back Cover**

Letters To The Editor

Dear *PC Novice*:

I've read other computer magazines before, but nothing quite compares to *PC Novice*!

I just wanted to let your staff know how greatly appreciated your magazine is to me. I am a novice-intermediate when it comes to computers. Your magazine, on the other hand, makes me feel like an expert. After never opening a computer before, I now know how to install a CD-ROM drive and upgrade my RAM memory, just to mention a few.

Thanks for thinking about readers like me. Keep up the excellent work!

David A. Oronos/Bay Point, CA

Dear *PC Novice*:

I just wanted to write and thank you for your magazine. I'm new to computers, and your magazine has helped me to be confident when I sit down at my computer. Your writers talk to people like me in plain English. I'm always finding some neat little thing I can do with my computer when I read *PC Novice*.

I've learned more about my computer through your magazine than I have from the manuals. It seems every time I have a question, your next issue has the answer. Very informative, knowledgeable writers and great articles cause me to look forward to the next issue. Thanks again and keep up the great work.

Mark King/Chattanooga, TN

Dear *PC Novice*:

Ever since I first discovered *PC Novice* on a magazine rack, I've been delighted with it. It indeed lives up to the statement, "Personal Computers in Plain English," on the cover. I save each issue so that I'll have it at my fingertips when I need to look up something.

I subscribe to another computer magazine and often feel that it has "passed me up" because there's so much in it I don't understand and have no interest in. I've always been pleased with your magazine and, even if there are articles included that don't interest me at the time, I know I can go back to them later if I need to.

I recently took one of those computer book club special offers to learn about going online. They are good books; however, shortly after the books arrived in my mailbox, I spotted your *Guide To Going Online* on the racks and found it had what I needed, concise and simply stated.

I simply want to say, "Thanks, *PC Novice*, and keep on doing it right."

Nina Keenam/Andalusia, AL

Letters to the Editor should be sent to: *PC Novice* / P.O. Box 85380, Lincoln, NE 68501-5380. Letters may be edited for clarity or space.

FAX FEEDBACK

Presents . . .

Topic of the month . . . **E-mail**

In our everlasting attempt to give you, our reader, the computer information you want and need, we have developed a monthly fax feedback section. The purpose of these periodic surveys is to find out more about you, the computer-related products and services you use, and how you use them. Our intent is to find out how to tailor upcoming article topics to better serve your needs. Your comments are very important to us; we want to hear from you!

To show our appreciation for your comments, we will randomly select one Fax Feedback participant to receive a *PC Novice* T-Shirt.

If you do not have access to a fax machine or would prefer to mail your response, please address your comments to:

Fax Feedback
***PC Novice* Magazine**
P.O. Box 85380
Lincoln, NE 68501-5380

Fax Number
402-479-2104

1. Do you use E-mail? (Check all that apply.)
   - ☐ Yes, at home
   - ☐ Yes, at work
   - ☐ No (If "No," skip to question 6)

2. If yes, what type(s) of E-mail do you use? (Check all that apply.)
   - ☐ Internal office system
   - ☐ Internet
   - ☐ Online Services
   - ☐ BBSes
   - ☐ Other: _____

3. If you use E-mail at work, what percent of your E-mails are for personal use?
   - ☐ None
   - ☐ 1% to 25%
   - ☐ 26% to 50%
   - ☐ More than 50%

4. How often do you send E-mail messages (through any source) each week?
   - ☐ Less than once a week
   - ☐ 1 to 10 times
   - ☐ 11 to 25 times
   - ☐ 26 to 50 times
   - ☐ More than 50 times

5. What is the most unique way you have used E-mail?

   _____
   _____
   _____
   _____

6. Please list any subjects or areas of concern we should cover in a feature article on E-mail.

   _____
   _____
   _____
   _____

We look forward to hearing from you. Thanks for your time!

Name and address:
STOP *This is optional, but necessary to be included in the drawing.*

Name: _____

Address: _____

Phone: (_____) _____

Editorial
COMMENT

Our feature story this month, "Online Slime," created quite a stir in our offices. We expect it also will be the source of plenty of discussion among our readers.

The question the article raises is simple enough: Does the online world need to be regulated? While many of our journalism colleagues and fellow online enthusiasts will cringe at the following, our answer is a resounding "YES."

Freedom of speech does not mean that "anything goes."

The writers and editors of *PC Novice* go online more and more everyday. We send electronic mail, transfer files, contact sources, and perform a variety of research. While most of our communications are conducted via commercial online services, we also occasionally contact the out-of-the-way bulletin board or meander through the maze known as the Internet. We have found that, as a general journalist's tool, "cyberspace" is tough to beat.

We also have found, however, that the online world has its darker side. Surf the cyberwaves for any length of time, and you're bound to run across adult-oriented material that ranges from the mildly prurient to the grotesquely stomach-churning. Some of it can only be described as bizarre. From exhibitionists who post their own nude photos to newsgroups that openly solicit pedophiliacs, you can find almost anything dealing with sexuality without too much difficulty. (The examples just given were easily accessed through a popular online service.) We don't claim to be the end-all authority on what should and should not be made available for public access, but forums pandering to bestiality, necrophilia, and pedophilia? We don't think so.

Beyond explicit graphics and text, some of our writers have been propositioned and/or verbally assaulted online in ways that would be blatantly illegal if made in person. These obscene E-mail communications were the unintended result of signing on to online areas using obviously female names.

Something needs to be done.

While online purists will hold up the First Amendment as a shield against any attempt to regulate what goes on in their environment, we view that as a misguided effort. Don't get us wrong: As journalists, the editors and writers at *PC Novice* are especially concerned with the First Amendment. Freedom of speech is one of the most sacred individual rights that exists; anything that would impinge on that right must be critically examined, and thoroughly and openly discussed before being institutionalized. The freedom to openly profess opinions and disseminate personal views is a powerful force that promulgates and promotes our democratic society.

Along with the tremendous power that accompanies free speech, however, comes a tremendous responsibility. Freedom of speech does not mean that "anything goes." We may exist as individuals, but we live within a complex social matrix where everything we do can and does affect others. In the classic example taught to first-year journalism students, freedom of speech does not extend to someone falsely and maliciously yelling "Fire!" in a crowded movie theater.

Likewise, an individual's freedom of speech should not allow that person to obscenely proposition someone else online. An obscene E-mail is no different in content or intent than an obscene phone call. Yet some people who openly abhor the latter would still oppose any action being taken against people who send obscenities online. Why?

The conglomeration of online services, bulletin boards, and the Internet that is evolving into the so-called "Information Superhighway" may represent a new medium in mass communications, but altering the way we communicate doesn't alter the values and norms, the very nature, of why we communicate. Transferring something by bits and bytes doesn't transform the moral nature of it.

We favor regulation of the online world. We want to be able to give our children access to the vast information available online without having to worry what they accidentally run into. We want the freedom to go online without having to endure obscenities without recourse. We want a safe and healthy environment—whether it happens to be in cyberspace or not.

We are not saying that adult material cannot exist online. We are saying that it needs to be put in a place where parents can turn it off if they want to protect their children and where curious innocents won't be exposed to it unnecessarily.

We applaud Senator J. James Exon's efforts in the areas of online legislation. His Electronic Decency Act has helped alert the public to some of the problems that exist in the seedier side of the online universe. Regardless of what happens to that particular piece of legislation, he has at least prodded us to think about where we are heading.

Regulation can occur in many forms. Parents need to regulate what their children are doing. Online services need to regulate their own content. Bulletin boards need to regulate who has access to their material. But there also needs to be some sort of legal regulation available, to ensure widespread compliance and safety.

Toward that end, we urge the online community and society at large to continue this discussion, to reach a workable and amenable solution. ●

Computer Users Find Help

Dear Chip: I need help! I recently purchased a computer, and I'm having trouble finding computer help. I tried reading the manuals that came with my computer and software programs—that was a joke. Then I looked into taking some computer classes and quickly realized I couldn't afford them. Not to mention, a majority of the classes only covered a specific software program instead of the entire system, and the times the classes were offered were not convenient. On the newsstand, I found computer magazines filled mostly with advertisements. The editorial they *did* provide just talked about popular software programs instead of providing tutorials. Please help me find useful computer information that I can understand!

Signed,
Distressed

Dear Chip: I own a retail store in Oklahoma. I've had computers in my store for some time, but I don't know exactly how to use them nor what they can do for my business. I am looking for a computer publication that will provide me with up-to-date computer information as well as additional information about new techniques and procedures that will increase my business' profits. If there is such a magazine, please let me in on it before my competition discovers it!

Sincerely,
Befuddled

Dear Distressed: **I have the perfect solution to your problem—*PC Novice*. It is the ideal computer information source for you. Every month, *PC Novice* provides you with useful computer information that will help you learn more about your computer quickly and easily. You'll have fun, too.**

Remember: A person who is not afraid to learn technology is one step ahead of the rest.

*** These letters are fictional.**

Dear Befuddled: ***PC Today*—that is your answer. *PC Today* not only gives you up-to-date computer information, it also provides you with the newest and most efficient techniques and procedures other companies are using in their business. *PC Today* also profiles companies every month that use software programs that will help you implement these techniques in your business.**

Remember: Learn from others and improve on their mistakes.

Tape Here

Tape Here

PCNOVICE®

Tape Here

Fold Here Second

NO
POSTAGE STAMP
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 10 LINCOLN, NEBRASKA

Postage will be paid by addressee:

PC NOVICE
P.O. Box 85380
Lincoln, Nebraska 68501-9815

Fold Here First

Avery Colors™ Fluorescent and Pastel Laser Labels

Communiqué™ Business Stationery from Avery

Avery Index Maker® Dividers Laser or Ink Jet

Avery Laser Videotape Labels

Avery Laser Name Badge Labels and Name Tag Kits

Avery Laser Audio Tape Labels

Avery Laser Diskette Labels

Avery Full or Mini-Sheets™ Laser Labels White and Clear

Avery Laser File Folder Labels

Avery Laser Business Cards

It's time you discovered the full line of Avery® products. Products that not only let you make better use of your laser or ink jet printer, they'll help keep you organized and working more efficiently. Easily. In fact, the software you're currently using probably has Avery formats already in it. For an Avery New Products Catalog with sample offer, call (800) 732-8379 x 944. And you'll find everything you've been looking for.

The Products of Office Technology.

AVERY®

A Division of Avery Dennison

40,000 PHOTOGRAPHS!

$769.99* each

EACH STOCK PHOTO LIBRARY INCLUDES 20,000 PHOTOS!

- **Corel Visual Database** - Search for specific images from the 20,000 photographs available using descriptive keywords
- **Full-Color Reference Manual** - Displays all 20,000 photographs

HUNDREDS OF INDIVIDUAL TITLES

- 100 stunning photos on each CD-ROM

$17.99* each

COREL STOCK PHOTO LIBRARY

High Resolution & Royalty Free
Kodak Photo CD Format
PC & Mac Compatible
Ideal for Desktop Publishing

ALL COREL PROFESSIONAL PHOTOS INCLUDE:

- **Corel Photo CD Lab**
- **Corel Mosaic Visual File Manager**
- **Corel Artview Screen Saver**
- **Corel CD Audio**
- **Windows Wallpaper & Flipper**

- **HIGH RESOLUTION** - 5 resolutions from 128 X 192 up to 2048 X 3072 Each image is approximately 18 megs (uncompressed)
- **COLOR FUNCTIONALITY** - Grayscale, 16 colors, 256 colors or RGB (24 bit)
- **EXPORT FILTERS** - Windows: TIF, BMP, EPS, PCX or GIF. Macintosh: TIFF or PICT
- **COMPATIBILITY** - Can be read by any CD-ROM player (XA support not needed)

VOLUME SETS

- 2,500 photos on 25 CD-ROMs
- Full-color reference guide
- 13 different volume sets available

$144.99* each

Also available from Corel:

GALLERY 2 FOR WINDOWS

- 15,000 clipart images and symbols
- 500 fonts
- 500 photos
- 75 sound clips
- 10 video clips
- A multimedia file manager

$64.99* each
part # 70189

$ ATTENTION $
PROFESSIONAL PHOTOGRAPHERS!
If you are a professional photographer interested in having your photographs published in the world's leading photo CD-ROM collection, please call Corel Corporation at:
1-613-728-0826 ext. 85080

COREL
Call now for loaned librarians!
1-613-728-0826 ext. 3080
Document #1030

INTERACTIVE COMPUTERS PC Mall

Call Today!
1-800-555-MALL
Priority Code CTP1114

*US$ plus applicable taxes.